

Microsoft Calender DDF

Für Abfragen stehen diese drei Möglichkeiten zur Verfügung. Konkrete Beispielabfragen sind im Anhang am Ende zu finden. Für das DDF wurde Variante 1 ausgewählt, aufgrund der Unterstützung von Slave-Devices und einem Fehler bei POST in OS V9615-06.

1. GET /users/{id}/calendarView: nur ein Benutzer oder Raum pro Request, liefert volle Eventdetails, \$select kann verwendet werden, um bestimmte Felder auszuwählen.
2. POST /users/{id}/calendar/getSchedule: mehrere Benutzer/Räume möglich, liefert Free/Busy, keine vollen Events, /me nur mit Delegated Token, /users/{id} App-Token möglich, \$select nicht verfügbar.
3. GET /users/{id}/calendarView mit \$batch: mehrere Benutzer/Räume möglich bis 20 pro Batch, liefert volle Eventdetails, bei mehr Adressen mehrere Batches nötig, \$select kann in jedem Teil-Request genutzt werden.

In der DeviceStation ist das „Slaves“-Eingabefeld für die E-Mail-Adresse(n) vorgesehen. Über individuelle Eingabefelder werden hier die Parameter für Tokenanfragen eingetragen. In Zukunft dann aber über JSON Upload Funktion.

Beim DDF-Upload oder beim Neustart werden zwei Ablauf-Timer gestartet, die sekundlich herunterzählen:

RefreshToken: für Hauptdevice (= erstes Slave)

RefreshEvent: für jedes Slave

Erreicht der RefreshToken-Timer den Wert 0, wird ein POST-Request für eine Tokenanfrage ausgelöst.

Als Antwort werden ein Token und eine Gültigkeitsdauer von 3600 s zurückgegeben.

Der RefreshToken-Timer wird anschließend auf $3600 \text{ s} * 5 / 6$ (= 3000 s) gesetzt.

```
POST https://login.microsoftonline.com/TENTANDID/oauth2/v2.0/token
```

client_id	CLIENTID
client_secret	SECRET
scope	https://graph.microsoft.com/.default
grant_type	client_credentials

```
{
  "token_type": "Bearer",
  "expires_in": 3599,
  "ext_expires_in": 3599,
  "access_token": "eyJ0eXAiOiJK...4x81dQg"
}
```

Erreicht der RefreshEvent-Timer den Wert 0, wird der aktuelle Zeitpunkt geprüft:

```
GET https://graph.microsoft.com/v1.0/users/[REDACTED]/calendarView?startDateTime=2025-10-28T08:30:00%2B01:00&endDateTime=2025-10-28T08:30:00%2B01:00&$select=subject,start,end&$count=true&$filter=isCancelled eq false&$top=1
```

```
{
  "@odata.context":
"https://graph.microsoft.com/v1.0/$metadata#users(' [REDACTED ]')/calendarView(subject,start,end)",
  "@odata.count": 0,
  "value": []
}
```

-> *EVENT_NOW_ACTIVE := FALSE;*

```
GET https://graph.microsoft.com/v1.0/users/[REDACTED]/calendarView?startDateTime=2025-10-28T14:30:00%2B01:00&endDateTime=2025-10-28T14:30:00%2B01:00&$select=subject,start,end&$count=true&$filter=isCancelled eq false&$top=1
```

```
{
  "@odata.context":
"https://graph.microsoft.com/v1.0/$metadata#users(' [REDACTED ]')/calendarView(subject,start,end)",
  "@odata.count": 1,
  "value": [
    {
      "@odata.etag": "W/\" [REDACTED ]\"",
      "id":
"[REDACTED ]",
      "subject": "[REDACTED ]",
      "start": {
        "dateTime": "2025-10-28T14:00:00.0000000",
        "timeZone": "Europe/Berlin"
      },
      "end": {
        "dateTime": "2025-10-28T15:00:00.0000000",
        "timeZone": "Europe/Berlin"
      }
    }
  ]
}
```

-> *EVENT_NOW_ACTIVE := TRUE;*

Daraufhin wird der Zeitraum von jetzt bis zu den nächsten X Stunden abgefragt.

```
GET https://graph.microsoft.com/v1.0/users/[REDACTED]/calendarView?startDateTime=2025-10-28T08:30:00%2B01:00&endDateTime=2025-10-28T11:30:00%2B01:00&$select=subject,start,end&$count=true&$filter=isCancelled eq false&$top=1
```

```
{
  "@odata.context":
"https://graph.microsoft.com/v1.0/$metadata#users(' [REDACTED] ')/calendarView(subject,start,end)",
  "@odata.count": 0,
  "value": []
}
```

-> *EVENT_UPCOMING := FALSE;*

```
GET https://graph.microsoft.com/v1.0/users/[REDACTED]/calendarView?startDateTime=2025-10-28T08:30:00%2B01:00&endDateTime=2025-11-28T11:30:00%2B01:00&$select=subject,start,end&$count=true&$filter=isCancelled eq false&$top=1
```

```
{
  "@odata.context":
"https://graph.microsoft.com/v1.0/$metadata#users(' [REDACTED] ')/calendarView(subject,start,end)",
  "@odata.count": 5,
  "value": [
    {
      "@odata.etag": "W/[REDACTED]",
      "id":
"[REDACTED]",
      "subject": "[REDACTED]",
      "start": {
        "dateTime": "2025-10-28T14:00:00.0000000",
        "timeZone": "Europe/Berlin"
      },
      "end": {
        "dateTime": "2025-10-28T15:00:00.0000000",
        "timeZone": "Europe/Berlin"
      }
    }
  ],
  "@odata.nextLink": "https://graph.microsoft.com/v1.0/users/[REDACTED]/calendarView?startDateTime=2025-10-28T08%3a30%3a00%2b01%3a00&endDateTime=2025-11-28T11%3a30%3a00%2b01%3a00&select=subject%2cstart%2cend&count=true&filter=isCancelled+eq+false&top=1&skip=1"
}
```

-> *EVENT_UPCOMING := TRUE;*

Der nächste Event Aufruf erfolgt, sobald die aktuelle UNIX-Zeit ein Vielfaches von 5 Minuten + 10 Sekunden erreicht.

Um Antworten in der Zeitzone "Europe/Berlin" über die Graph API zu erhalten, wird ein der Header benötigt

Prefer: outlook.timezone="Europe/Berlin"

Im System die Bausteine mit „Info“ sowie die einzelnen Räume anlegen. Die Gruppe „Info“ nur dem ersten Slave zuordnen.



15:03
Mi, 5. Nov.

Raum/Bereich
| Meeting Rooms



Info

Token Refresh2521 s

Info

Token ReceptionOk

Next Refresh15:05:10

Debug Verbose

..

Büro VKL

Refresh111 s

Info

Start

End

TriggerOff | Off 1 h

..

EG Präsentation

Refresh111 s

Info

Start05.11.2025 – 15:15:00

End05.11.2025 – 15:30:00

TriggerOff | On 3 h

..

Refresh290 s

Info

Start05.11.2025 – 15:15:00

End05.11.2025 – 15:30:00

TriggerOff | On 3 h

Data ReceptionOk

Look-ahead Time3 h

Event Now Active

Off

Event Upcoming

On

Time Zone

Europe/Berlin

Anhang

Variante 1)

GET https://graph.microsoft.com/v1.0/users/[REDACTED]/calendarView?startDateTime=2025-10-28T14:30:00%2B01:00&endDateTime=2025-10-28T15:30:00%2B01:00

```
{
  "@odata.context": "https://graph.microsoft.com/v1.0/$metadata#users('[REDACTED']/calendarView",
  "value": [
    {
      "@odata.etag": "W/\"[REDACTED]\"",
      "id": "[REDACTED]",
      "createdDateTime": "2025-10-24T12:17:59.6229145Z",
      "lastModifiedDateTime": "2025-10-24T12:18:56.1838024Z",
      "changeKey": "[REDACTED]",
      "categories": [],
      "transactionId": null,
      "originalStartTimeZone": "W. Europe Standard Time",
      "originalEndTimeZone": "W. Europe Standard Time",
      "iCalUID": "[REDACTED]",
      "uid": "[REDACTED]",
      "reminderMinutesBeforeStart": 15,
      "isReminderOn": false,
      "hasAttachments": false,
      "subject": "[REDACTED]",
      "importance": "normal",
      "sensitivity": "normal",
      "isAllDay": false,
      "isCancelled": false,
      "isOrganizer": false,
      "responseRequested": true,
      "seriesMasterId": null,
      "showAs": "busy",
      "type": "singleInstance",
      "webLink": "https://outlook.office365.com/owa/?itemid=[REDACTED]&exvsurl=1&path=/calendar/item",
      "onlineMeetingUrl": null,
      "isOnlineMeeting": false,
      "onlineMeetingProvider": "unknown",
      "allowNewTimeProposals": true,
      "occurrenceId": null,
      "isDraft": false,
      "hideAttendees": false,
      "responseStatus": {
        "response": "accepted",
        "time": "2025-10-24T14:18:07.4745804+02:00"
      },
      "start": {
        "dateTime": "2025-10-28T14:00:00.0000000",
        "timeZone": "Europe/Berlin"
      },
      "end": {
        "dateTime": "2025-10-28T15:00:00.0000000",
        "timeZone": "Europe/Berlin"
      },
      "location": {
        "displayName": "[REDACTED]",
        "locationUri": "[REDACTED]",
        "locationType": "conferenceRoom",
        "uniqueId": "[REDACTED]",
        "uniqueIdType": "directory",
        "address": {
          "street": "",
          "city": "",
          "state": "",
          "countryOrRegion": "US",
          "postalCode": ""
        },
        "coordinates": {}
      },
      "locations": [
        {
          "displayName": "[REDACTED]",
          "locationUri": "[REDACTED]",
          "locationType": "conferenceRoom",
          "uniqueId": "[REDACTED]",
          "uniqueIdType": "directory",
          "address": {
            "street": "",
            "city": "",
            "state": "",
            "countryOrRegion": "US",
            "postalCode": ""
          },
          "coordinates": {}
        }
      ]
    }
  ]
}
```

```
    }
  },
  "recurrence": null,
  "attendees": [
    {
      "type": "required",
      "status": {
        "response": "none",
        "time": "0001-01-01T00:00:00Z"
      },
      "emailAddress": {
        "name": "[REDACTED]",
        "address": "[REDACTED]"
      }
    },
    {
      "type": "resource",
      "status": {
        "response": "accepted",
        "time": "0001-01-01T00:00:00Z"
      },
      "emailAddress": {
        "name": "[REDACTED]",
        "address": "[REDACTED]"
      }
    }
  ],
  "organizer": {
    "emailAddress": {
      "name": "[REDACTED]",
      "address": "[REDACTED]"
    }
  },
  "onlineMeeting": null
}
]
```

Variante 2)

POST https://graph.microsoft.com/v1.0/users/[redacted]/calendar/getSchedule

```
{
  "schedules": [
    {
      "scheduleId": "[redacted]",
      "availabilityView": "22",
      "scheduleItems": [
        {
          "isPrivate": false,
          "status": "busy",
          "subject": "[redacted]",
          "location": "[redacted] (US)",
          "isMeeting": true,
          "isRecurring": false,
          "isException": false,
          "isReminderSet": false,
          "start": {
            "dateTime": "2025-10-28T14:00:00.0000000",
            "timeZone": "Europe/Berlin"
          },
          "end": {
            "dateTime": "2025-10-28T14:36:00",
            "timeZone": "Europe/Berlin"
          },
          "availabilityViewInterval": 5
        }
      ]
    }
  ]
}
```

```
{
  "@odata.context": "https://graph.microsoft.com/v1.0/$metadata#Collection(microsoft.graph.scheduleInformation)",
  "value": [
    {
      "scheduleId": "[redacted]",
      "availabilityView": "22",
      "scheduleItems": [
        {
          "isPrivate": false,
          "status": "busy",
          "subject": "[redacted]",
          "location": "[redacted] (US)",
          "isMeeting": true,
          "isRecurring": false,
          "isException": false,
          "isReminderSet": false,
          "start": {
            "dateTime": "2025-10-28T14:00:00.0000000",
            "timeZone": "W. Europe Standard Time"
          },
          "end": {
            "dateTime": "2025-10-28T15:00:00.0000000",
            "timeZone": "W. Europe Standard Time"
          }
        }
      ],
      "workingHours": {
        "daysOfWeek": [
          "monday",
          "tuesday",
          "wednesday",
          "thursday",
          "friday"
        ],
        "startTime": "08:00:00.0000000",
        "endTime": "17:00:00.0000000",
        "timeZone": {
          "name": "Pacific Standard Time"
        }
      }
    },
    {
      "scheduleId": "[redacted]",
      "availabilityView": "00",
      "scheduleItems": [],
      "workingHours": {
        "daysOfWeek": [
          "monday",
          "tuesday",
          "wednesday",
          "thursday",
          "friday"
        ],
        "startTime": "08:00:00.0000000",
        "endTime": "17:00:00.0000000",
        "timeZone": {
          "name": "Pacific Standard Time"
        }
      }
    }
  ]
}
```

Variante 3)

POST [https://graph.microsoft.com/v1.0/\\$batch](https://graph.microsoft.com/v1.0/$batch)

```
{
  "requests": [
    {
      "id": "1",
      "method": "GET",
      "url": "/users/[REDACTED]/calendarView?startDateTime=2025-10-28T14:30:00%2B01:00&endDateTime=2025-10-28T15:30:00%2B01:00"
    },
    {
      "id": "2",
      "method": "GET",
      "url": "/users/[REDACTED]/calendarView?startDateTime=2025-10-28T14:30:00%2B01:00&endDateTime=2025-10-28T15:30:00%2B01:00"
    }
  ]
}
```

```
{
  "responses": [
    {
      "id": "1",
      "status": 200,
      "headers": {
        "Cache-Control": "private",
        "Content-Type": "application/json; odata.metadata=minimal; odata.streaming=true; IEEE754Compatible=false; charset=utf-8"
      },
      "body": {
        "@odata.context": "https://graph.microsoft.com/v1.0/$metadata#users('[REDACTED]')/calendarView",
        "value": [
          {
            "@odata.etag": "W/\"[REDACTED]\"",
            "id": "[REDACTED]",
            "createdDateTime": "2025-10-24T12:17:59.6229145Z",
            "lastModifiedDateTime": "2025-10-24T12:18:56.1838024Z",
            "changeKey": "[REDACTED]",
            "categories": [],
            "transactionId": null,
            "originalStartTimeZone": "W. Europe Standard Time",
            "originalEndTimeZone": "W. Europe Standard Time",
            "iCalUID": "[REDACTED]",
            "uid": "[REDACTED]",
            "reminderMinutesBeforeStart": 15,
            "isReminderOn": false,
            "hasAttachments": false,
            "subject": "[REDACTED]",
            "importance": "normal",
            "sensitivity": "normal",
            "isAllDay": false,
            "isCancelled": false,
            "isOrganizer": false,
            "responseRequested": true,
            "seriesMasterId": null,
            "showAs": "busy",
            "type": "singleInstance",
            "webLink": "https://outlook.office365.com/owa/?itemid=[REDACTED]&exvsurl=1&path=/calendar/item",
            "onlineMeetingUrl": null,
            "isOnlineMeeting": false,
            "onlineMeetingProvider": "unknown",
            "allowNewTimeProposals": true,
            "occurrenceId": null,
            "isDraft": false,
            "hideAttendees": false,
            "responseStatus": {
              "response": "accepted",
              "time": "2025-10-24T12:18:07.4745804Z"
            },
            "start": {
              "dateTime": "2025-10-28T13:00:00.0000000",
              "timeZone": "UTC"
            },
            "end": {
              "dateTime": "2025-10-28T14:00:00.0000000",
              "timeZone": "UTC"
            },
            "location": {
              "displayName": "[REDACTED]",
              "locationUri": "[REDACTED]",
              "locationType": "conferenceRoom",
              "uniqueId": "[REDACTED]",
              "uniqueIdType": "directory",
              "address": {
                "street": "",
                "city": ""
              }
            }
          }
        ]
      }
    }
  ]
}
```

```

        "state": "",
        "countryOrRegion": "US",
        "postalCode": ""
    },
    "coordinates": {}
},
"locations": [
    {
        "displayName": " ",
        "locationUri": " ",
        "locationType": "conferenceRoom",
        "uniqueId": " ",
        "uniqueIdType": "directory",
        "address": {
            "street": "",
            "city": "",
            "state": "",
            "countryOrRegion": "US",
            "postalCode": ""
        },
        "coordinates": {}
    }
],
"recurrence": null,
"attendees": [
    {
        "type": "required",
        "status": {
            "response": "none",
            "time": "0001-01-01T00:00:00Z"
        },
        "emailAddress": {
            "name": " ",
            "address": " "
        }
    },
    {
        "type": "resource",
        "status": {
            "response": "accepted",
            "time": "0001-01-01T00:00:00Z"
        },
        "emailAddress": {
            "name": " ",
            "address": " "
        }
    }
],
"organizer": {
    "emailAddress": {
        "name": " ",
        "address": " "
    }
},
"onlineMeeting": null
}
]
}
},
{
    "id": "2",
    "status": 200,
    "headers": {
        "Cache-Control": "private",
        "Content-Type": "application/json; odata.metadata=minimal; odata.streaming=true; IEEE754Compatible=false; charset=utf-8"
    },
    "body": {
        "@odata.context": "https://graph.microsoft.com/v1.0/$metadata#users(' ')/calendarView",
        "value": []
    }
}
]
}
}

```

Weitere mögliche Intervalle

Start	End	Wenn @odata.count > 0
T - 2h	T	PAST_NOW_H_ACTIVE
T - 15 min	T	PAST_NOW_MIN_ACTIVE
T	T + 15 min	NOW_FUTURE_MIN_ACTIVE
T	T + 2h	NOW_FUTURE_H_ACTIVE
T - 2h	T - 2h	PAST_H_ACTIVE
T - 15 min	T - 15 min	PAST_MIN_ACTIVE
T	T	NOW_ACTIVE
T + 15 min	T + 15 min	FUTURE_MIN_ACTIVE
T + 2h	T + 2h	FUTURE_H_ACTIVE

