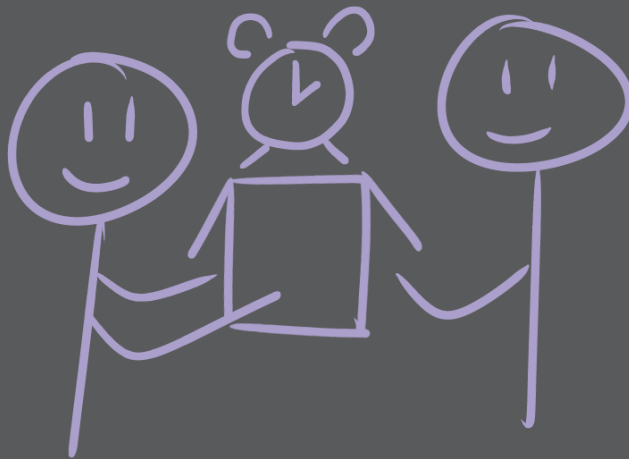


# WeSchedule

---



## WeSchedule

Joshua Barbee, Caleb Krauter, Tyler Robinson, Thomas Tien

# Abstract

WeSchedule is a collaborative team management website application. On this website, group members can be organized into topics, where all users in the topic share the following resources: (1) a calendar/list of events such as meetings and deadlines, and (2) a chat room where the members of a topic can communicate. Additionally, important points in the group's history can be added to the group's shared log, where they are permanently recorded and will be visible to all group members as long as the group exists.

Every user must create an account with a username, a name, an email address, a password, and a preferred language. The username is permanent, but the name, email address, password, and preferred language can be changed by the user at any time. Once signed into their account with their username and password, a user can be added to or create any number of groups. Once a user creates a group, they can add other users by their usernames; in the future, this will involve an invitation process that requires a user to accept a group invite.

Within a group, the group owner is a local administrator and can grant this privilege to other group members. Local administrators can create, modify, and delete topics; add and remove group members; and set topic members' permissions to create events and messages. If a topic member has the proper permissions, they can create, modify, and delete events; although not all topic members can create events and messages, all topic members can view the events and messages within their topics. Being logged in with an account is required for all operations within the app (except logging in and signing up); being a group member is required for all operations within a group; and being a topic member is required for all operations within a topic.

Events are specified with a start time, a duration in minutes, an event name, and an optional description. The list of events within a topic that occur after a certain date can be retrieved, allowing topic members to view the nearest upcoming events. Messages currently only allow text and are not editable or deletable (though this will likely change in the future), and a user's messages do not disappear when they are removed from the group. With a simple toggle in the GUI while viewing messages, a user can have all messages automatically translated to their preferred language.

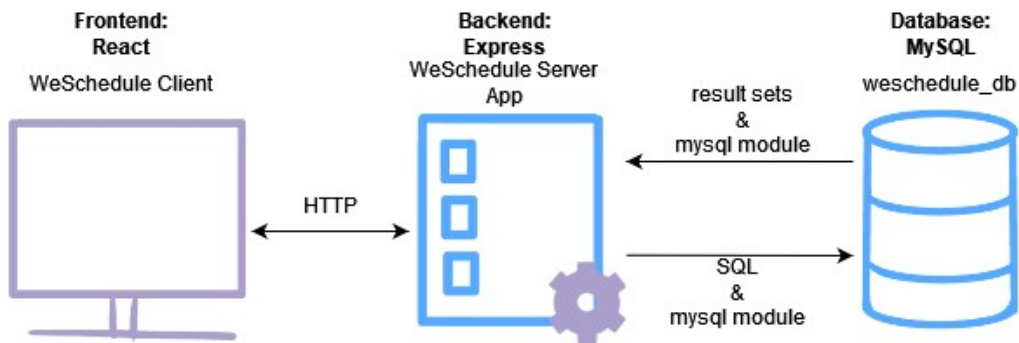
## Goals

Our main goal is to create an intuitive, accessible team management web application for a wide variety of use cases. Groups can be used for classroom and work environments with time-sensitive goals like meetings, assignments, and projects; groups can be used as simple social groups with several chat rooms and tools for planning events; and, because of the ability to set event and message creation permissions, groups can also be used to convey information in one direction to a large number of interested parties (by restricting the permissions of all members except those chosen to share the information), such as for a simple news service or blog. The translation feature also supports multilingual groups, which further serves the project's goal of providing simple scheduling and communication tools to as many customers as possible.

# Appendix A

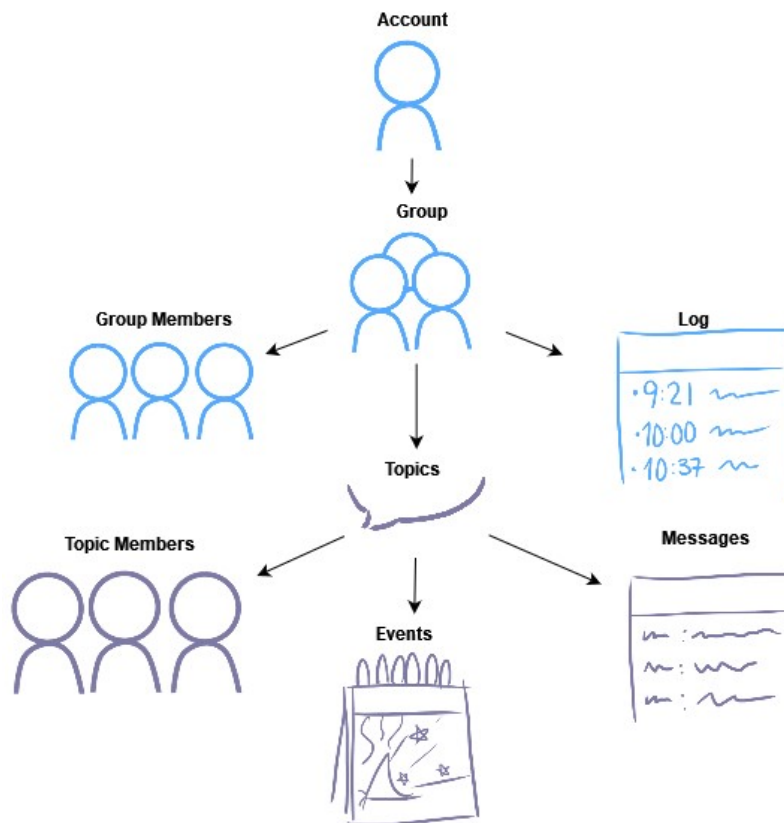
## Architectural Design

### 3-Tier Structure



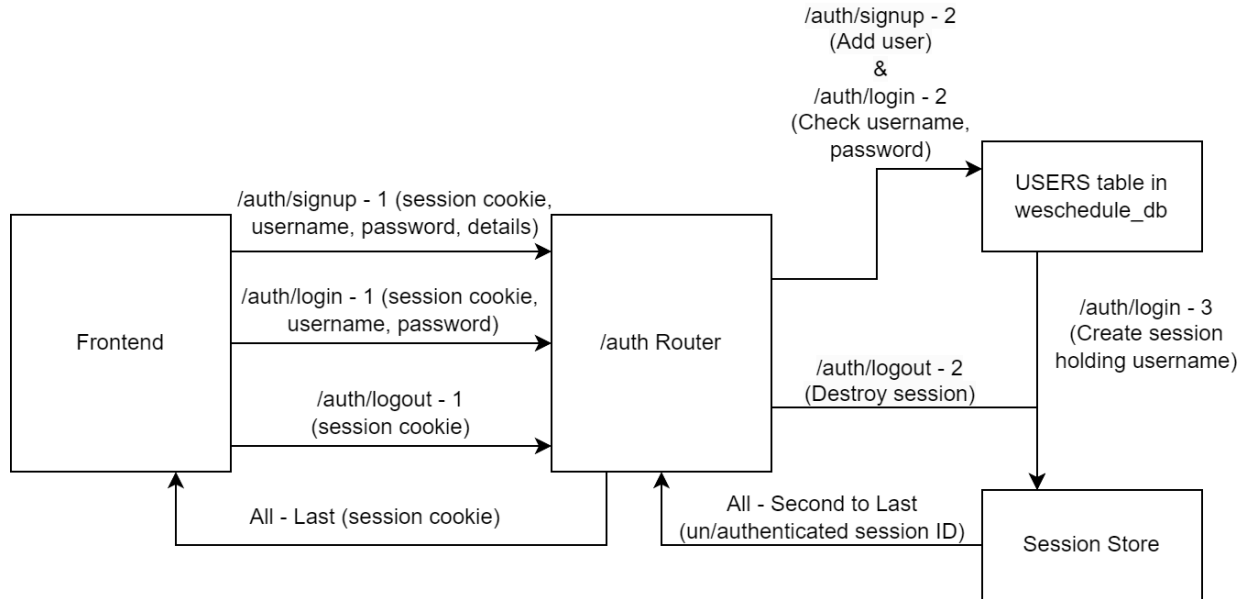
### Frontend Views

(The Account view gives access to the Group view. The Group view gives access to the Log, Group Members, and Topics views. ...)

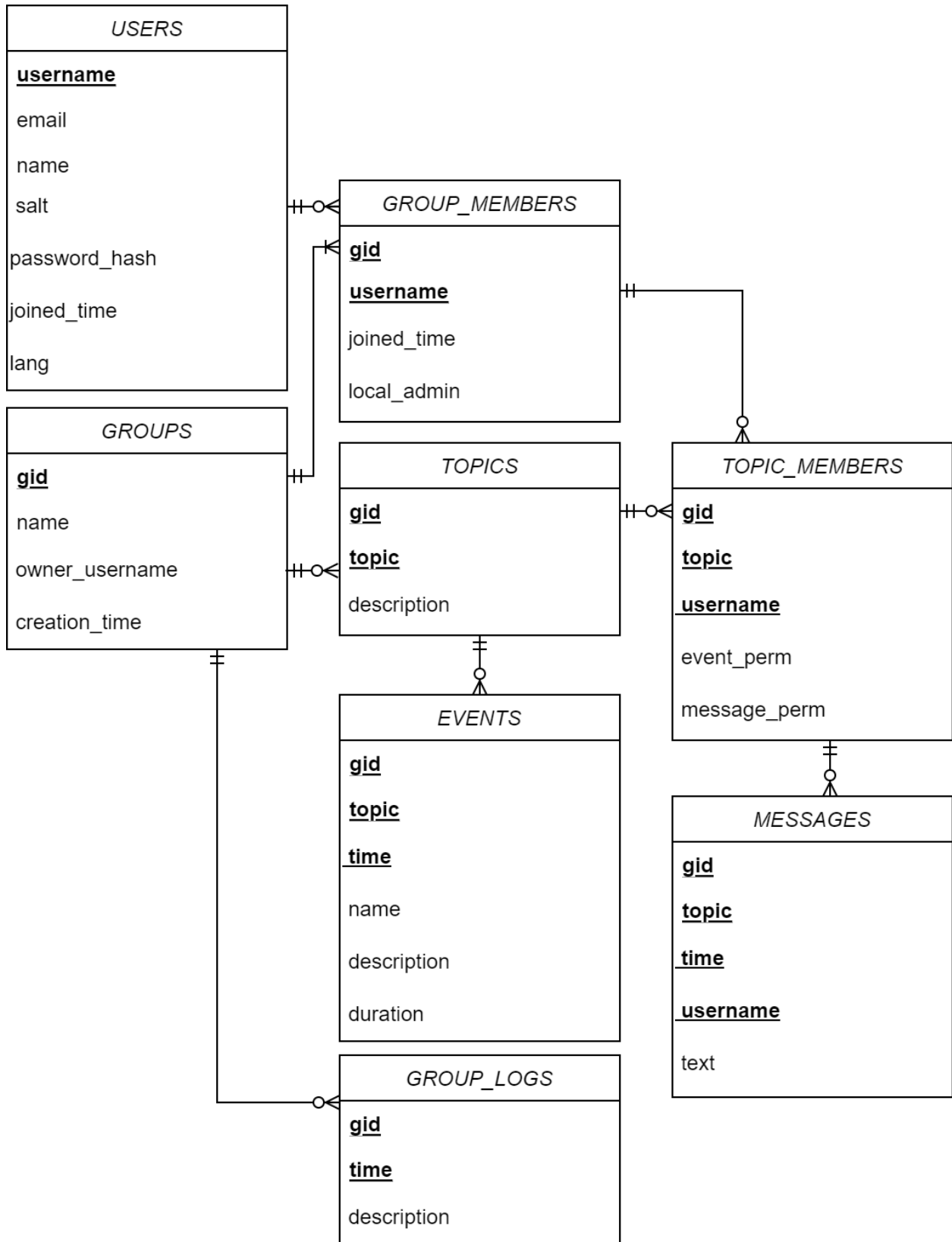


## Backend /auth Service Internals

The step number for the processing for each route is labeled  
(e.g., “/auth/logout - 1” refers to the first step in handling /auth/logout and lists the content/action involved with that step)



ER Diagram of Database (weschedule\_db)



# Appendix B

## Data Storage Design and Sample Data

### Schema

- USERS (username, email, name, salt, password\_hash, joined\_time, lang, admin)
  - PK: username
- GROUPS (gid, name, owner\_username, creation\_time)
  - PK, AI: gid
  - FK: owner\_username (into USERS)
- GROUP\_MEMBERS (gid, username, joined\_time, local\_admin)
  - PK: gid, username
    - IN THIS ORDER (speed up accessing list of all group's members with index)
  - FK: gid (into GROUPS); username (into USERS)
- TOPICS (gid, topic, description)
  - PK: gid, topic
  - FK: gid (into GROUPS)
- TOPIC\_MEMBERS (gid, topic, username, event\_perm, message\_perm)
  - PK: gid, topic, username
  - FK: gid, topic (into TOPICS); gid, username (into GROUP\_MEMBERS)
- MESSAGES (gid, topic, time, username, text)
  - PK: gid, topic, time, username
    - IN THIS ORDER (speed up retrieving all of a group's messages in a topic in increasing order of time with index)
  - FK: gid, topic, username (into TOPIC\_MEMBERS)
- EVENTS (gid, topic, time, name, description, duration)
  - PK: gid, topic, time
    - IN THIS ORDER (speed up accessing list of all group's events, especially by most/least recent); this also disallows events at the exact same time in the same topic.
  - FK: gid, topic (into TOPICS)
- GROUP\_LOGS (gid, time, description)
  - PK: gid, time
  - FK: gid (into GROUPS)

# Sample Data

## Users

username	name	email	salt	password_hash	joined_time	lang	admin
admin	Global Admin	admin	0x1d11b6c07f3abf13f92e0b68e14cc29	0x0ac1c17a205d25d87c9fe502b8be878c3286f640805b94d7...	2023-12-08 22:47:18	en	1
anotherUsername	Don R. Member	aGroupMember3@test.com	0x6919550d37a4a7c35ff50e920309d44e	0x6e33dc35f6b00bc6cb61ccb2637c7de01664a7d44817076c...	2023-12-08 11:34:00	es	0
bobsAccount	Bob Realperson	aGroupOwner@test.com	0x92b0c9e172b70fca14841c14957d375d	0x1d32726bcd9409b10c6bc18bee41eafab6ed73d20c4fba1...	2023-12-08 11:31:48	en	0
mylastnameiscool	Sally Lastname	aGroupMember2@test.com	0xf821586ee56cab8e61791c38b57d4d4f	0xc44cf2dc70566d3e1a1d7e8d20dcf338336e3c7c6152b02b...	2023-12-08 11:33:50	en	0
ray005	Ray Realpersonson	aGroupMember1@test.com	0x0744198d7483d1ca0676f08f66aabc1	0x61a34430988137bad291c5aab3c345a9988aaf54835ddcb6...	2023-12-08 11:33:00	en	0
yetAnotherUser	Green Greene	aGroupMember4@test.com	0x059583708b3ae723012107c7a817df04	0x935eda74b3d5b8e3362e26b8069355922e8624aeb1bda293...	2023-12-11 13:09:54	es	0

## Groups

gid	name	owner_username	creation_time
11	Bob's Company	bobsAccount	2023-12-11 11:43:55
12	Bob's Acting Troupe	bobsAccount	2023-12-11 11:44:19
13	The Secret Group	yetAnotherUser	2023-12-11 13:54:22

## Group Members

gid	username	joined_time	local_admin
11	bobsAccount	2023-12-11 11:43:55	1
11	mylastnameiscool	2023-12-11 13:02:05	0
11	ray005	2023-12-11 13:01:48	1
11	yetAnotherUser	2023-12-11 13:11:12	0
12	anotherUsername	2023-12-11 13:02:47	0
12	bobsAccount	2023-12-11 11:44:19	1
12	mylastnameiscool	2023-12-11 13:02:33	0
12	yetAnotherUser	2023-12-11 13:11:08	0
13	anotherUsername	2023-12-11 13:55:04	0
13	mylastnameiscool	2023-12-11 13:54:57	0
13	yetAnotherUser	2023-12-11 13:54:22	1

## Topics

gid	topic	description
11	General	
11	Production	Product deployment
11	Sales	Marketing discussions
11	Testing	Product testing
12	General	
12	Scheduling	Planning events
12	Skit Ideas	Skit brainstorming
13	General	

## Topic Members

gid	topic	username	event_perm	message_perm
11	General	bobsAccount	1	1
11	General	mylastnameiscool	0	1
11	General	ray005	1	1
11	General	yetAnotherUser	0	1
11	Production	bobsAccount	1	1
11	Production	mylastnameiscool	0	1
11	Production	yetAnotherUser	0	1
11	Sales	bobsAccount	1	1
11	Sales	ray005	1	1
11	Testing	bobsAccount	1	1
11	Testing	mylastnameiscool	0	1
11	Testing	yetAnotherUser	0	1
12	General	anotherUsername	1	1

...

## Messages

gid	topic	time	username	text
11	General	2023-12-11 13:30:28	bobsaccount	Welcome to the group!
11	General	2023-12-11 13:43:55	mylastnameiscool	Hello
11	Production	2023-12-11 13:38:58	bobsaccount	This channel is for discussing and scheduling the ...
11	Production	2023-12-11 13:44:50	mylastnameiscool	The deadline for the scheduling app's release is c...
11	Production	2023-12-11 13:45:27	yetAnotherUser	Ugh, don't remind me
11	Sales	2023-12-11 13:39:23	bobsaccount	This channel is for developing and evaluating mark...
11	Testing	2023-12-11 13:39:52	bobsaccount	This channel is for discussing and planning how to...
12	General	2023-12-11 13:40:38	bobsaccount	Welcome to the acting group! Feel free to drop any...
12	General	2023-12-11 13:51:32	yetAnotherUser	I am a dancer. That is to say, a conduit. I don't ...
12	Scheduling	2023-12-11 13:41:45	bobsaccount	We can discuss what dates work for everyone in thi...

...

## Events

gid	topic	time	name	description	duration
11	General	2023-12-22 07:00:00	Holiday (No Work)		0
11	Production	2023-12-04 10:00:00	Weekly Meeting		30
11	Production	2023-12-11 10:00:00	Weekly Meeting		30
11	Production	2023-12-12 08:00:00	Initial Release of WeSchedule		0
11	Production	2023-12-18 10:00:00	Weekly Meeting (Maintenance Evaluation)		30
11	Sales	2023-12-12 08:00:00	WeSchedule Day 1 Release Numbers	Discussing the sales performance of WeSchedule in ...	60
11	Testing	2023-12-05 09:00:00	Weekly Testers Meeting		90
11	Testing	2023-12-12 09:00:00	Weekly Testers Meeting		90
11	Testing	2023-12-19 09:00:00	Weekly Testers Meeting		90
12	General	2023-12-16 09:00:00	Weekly Improv Session		120
12	General	2023-12-23 09:00:00	Weekly Improv Session		120
12	General	2023-12-30 09:00:00	Weekly Improv Session		120
13	General	2023-12-14 12:15:00	National Unplug Everyone's Keyboard Day	~sneak back into the office while everyone is on L...	10

## Group Logs

gid	time	description
11	2023-12-11 15:42:35	First day at the office.
12	2023-12-11 16:55:30	First sponsor confirmed.
13	2023-12-11 16:56:46	~first secret meeting~
13	2023-12-11 16:57:35	~donut heist successful~



# Appendix C

## Sample Screenshots of Swagger Docs

### All services

<b>Authentication</b>	WS-1 (Has External Service 1) - Creating, logging into, and logging out of accounts.	▼
<b>Users</b>	WS-2 - Retrieving and modifying account data.	▼
<b>Groups</b>	WS-3 (Has Composition 1) - Creating, accessing, modifying, and deleting groups.	▼
<b>Group Members</b>	WS-4 - Adding/removing group members and modifying member permissions.	▼
<b>Topics</b>	WS-5 - Creating, accessing, modifying, and deleting topics in a group.	▼
<b>Topic Members</b>	WS-6 - Creating, accessing, modifying, and deleting topics in a group.	▼
<b>Messages</b>	WS-7 (Has Composition 2) - Creating, accessing, modifying, and deleting messages within a topic in a group.	▼
<b>Events</b>	WS-8 - Creating, accessing, modifying, and deleting events within a topic in a group.	▼
<b>Group Log</b>	WS-9 - Creating, accessing, and deleting logged history points in a group.	▼
<b>Language</b>	WS-10 (Has External Service 2) - Accessing the list of language supported by the application and translated text between them.	▼

### WS-1 (/auth) and WS-2 (/users) All Routes

<b>Authentication</b>	WS-1 (Has External Service 1) - Creating, logging into, and logging out of accounts.	⤴
<b>POST</b>	<b>/auth/signup</b> Create a new account with an email, password, holder name, and preferred language. An attempt will also be made to establish a session, but this may not be successful; the user must then explicitly use the /auth/login endpoint.	▼
<b>POST</b>	<b>/auth/login</b> Log into an account with a username and password. Establish this session with the username.	▼
<b>GET</b>	<b>/auth/logout</b> Log out of the current account by ending the client's current session. Note that this does not log out of the account on other devices, as the current session is based only on the session ID sent in the client's cookie.	▼
<b>Users</b>	WS-2 - Retrieving and modifying account data.	⤴
<b>GET</b>	<b>/users</b> Retrieve all information for the current user, or (for global admins only), retrieve all information for a user from their email. For customer support, global admins may use this for recovering a user's account information (including the username required to sign in) from their email.	▼
<b>PUT</b>	<b>/users</b> Update the password, email, name, and/or language of the current user. If multiple sessions are logged in to the same account and the name is changed, the new name will not be shown in other sessions until they log in again.	▼

### WS-8 (/groups/{gid}/topics/{topic}/events) All Routes

<b>Events</b>	WS-8 - Creating, accessing, modifying, and deleting events within a topic in a group.	⤴
<b>GET</b>	<b>/groups/{gid}/topics/{topic}/events</b> Retrieve the time, duration, name, and description for all events in the topic.	▼
<b>POST</b>	<b>/groups/{gid}/topics/{topic}/events/{time}</b> Add the event with the specified name, start time, duration, and description to the topic. Only Events with event creation permission can do this.	▼
<b>PUT</b>	<b>/groups/{gid}/topics/{topic}/events/{time}</b> Update the time, name, description, and/or duration of the event. Only topic members with event creation permission can do this.	▼
<b>DELETE</b>	<b>/groups/{gid}/topics/{topic}/events/{time}</b> Delete the specified event. Only local admins can do this.	▼

## WS-3 (/groups) Group Creation Route

**POST** /groups

(Composition 1) Create a new group owned by the current user and labeled with the provided name. COMPOSITION - After making the group, call the group member service WS-4 to add the owner as a member and call the topic service WS-5 to make a General topic, which allows the topic member service WS-6 to be called to add the owner as a member of the topic created by the call to WS-5.

**Parameters** Try it out

No parameters

**Request body** required application/json

Example Value Schema

```
{
  "name": "Company A"
}
```

**Responses**

Code	Description	Links
201	Group created. <div>Media type application/json Controls Accept header.</div> <div>Example Value Schema</div> <pre>{   "success": "X successfully updated/deleted." }</pre>	No links
400	The body is missing name. <div>Media type application/json</div> <div>Example Value Schema</div>	No links

## WS-6 (/group/{gid}/topics/{topic}/users) Update Topic Member Permissions

**PUT** /groups/{gid}/topics/{topic}/users/{username} Update the user's event and/or message permissions. Only a local admin can do this. This cannot be applied to local admins.

**Parameters** Try it out

Name	Description
<b>gid</b> * required integer (path)	The target group's ID gid
<b>topic</b> * required string (path)	The target topic's name topic
<b>username</b> * required string (path)	The target user's username username

**Request body** required application/json

Example Value Schema

```
{
  "event_perm": true
}
```

**Responses**

Code	Description	Links
200	Specified values are now used, even if the same values as before were specified. <div>Media type application/json Controls Accept header.</div> <div>Example Value Schema</div>	No links

## WS-10 (/language) Get Supported Languages “Try it out”

The screenshot shows the Swagger UI interface. At the top, there's a header bar with a blue button labeled "GET" and a link "/language". Below this, the URL "(External Service 2 - languages allowed for translation with Azure). Retrieve the list of valid languages." is displayed. The main area has a tab labeled "Parameters" which is currently empty, showing "No parameters". To the right of this section is a red "Cancel" button. Below the parameters section is a large blue button labeled "Execute" and a smaller grey button labeled "Clear". Underneath, the "Responses" section is visible. It shows a "Curl" command: 

```
curl -X 'GET' \
'http://localhost:3001/language' \
-H 'accept: application/json'
```

. Below the curl command is the "Request URL" field containing "http://localhost:3001/language". Further down, the "Server response" section shows a status code of "200" and a "Response body" containing a JSON array of language codes: {"af": "Afrikaans", "am": "አማርኛ", "an": "Aragonés", "as": "অসমীয়া", "az": "Azərbaycan", "ba": "Башҡорт", "bg": "Български", "bh": "भोजपुरी", "bn": "বাংলা", "bo": "བོད་སྐད་", "brx": "ᱠᱷᱚᱨ", "bs": "Bosnian", "ca": "Català", "cs": "Čeština", "cy": "Cyraeg", "da": "Dansk", "de": "Deutsch", "doi": "Dogri", "dsb": "Dolnoserbscina"}.

## WS-7 (/groups/{gid}/topics/{topic}/messages) Get Messages “Try it out” (success, logged in and topic member)

**GET** /groups/{gid}/topics/{topic}/messages  
(Composition 2) Retrieve all messages sent in the topic. This can only be done by topic members. If the Translate header is given as true, all messages are translated before being returned. If translation fails, the Translation-Fail header will be sent. COMPOSITION - If translation is enabled, retrieve the topic's messages as part of this service, call the users service WS-2 to get the current user's preferred language, pass the messages and the language to the language service WS-10 for translation, and return the translated messages to the client.

**Parameters** Cancel

Name	Description
<b>gid</b> * <small>required</small> integer <small>(path)</small>	The target group's ID
<b>topic</b> * <small>required</small> string <small>(path)</small>	The target topic's name
<b>Translate</b> boolean <small>(header)</small>	Whether to translate all the messages to the users preferred language

**Execute** **Clear**

**Responses**

**Curl**  

```
curl -X 'GET' \
  'http://localhost:3001/groups/11/topics/General/messages' \
  -H 'accept: application/json'
```

**Request URL**  
http://localhost:3001/groups/11/topics/General/messages

**Server response**

Code	Details
200	<div><b>Response body</b><pre>{   {     "time": "2023-12-11T21:30:28.000Z",     "username": "hubsaccount",     "text": "Welcome to the group!"   },   {     "time": "2023-12-11T21:43:55.000Z",     "username": "mylastnameiscool",     "text": "Hello"   } }</pre></div> <span>Download</span>

## WS-7 (/groups/{gid}/topics/{topic}/messages) Get Messages “Try it out” (fail, not logged in)

**GET** /groups/{gid}/topics/{topic}/messages  
(Composition 2) Retrieve all messages sent in the topic. This can only be done by topic members. If the Translate header is given as true, all messages are translated before being returned. If translation fails, the Translation-Fail header will be sent. COMPOSITION - If translation is enabled, retrieve the topic's messages as part of this service, call the users service WS-2 to get the current user's preferred language, pass the messages and the language to the language service WS-10 for translation, and return the translated messages to the client.

**Parameters** Cancel

Name	Description
<b>gid</b> * <small>required</small> integer <small>(path)</small>	The target group's ID
<b>topic</b> * <small>required</small> string <small>(path)</small>	The target topic's name
<b>Translate</b> boolean <small>(header)</small>	Whether to translate all the messages to the users preferred language

**Execute** **Clear**

**Responses**

**Curl**  

```
curl -X 'GET' \
  'http://localhost:3001/groups/11/topics/General/messages' \
  -H 'accept: application/json'
```

**Request URL**  
http://localhost:3001/groups/11/topics/General/messages

**Server response**

Code	Details
401	<div><b>Error: Unauthorized</b> <b>Response body</b><pre>{   "error": "Invalid session. You must log in with /auth/login." }</pre></div> <span>Download</span>

**Response headers**

```
access-control-allow-origin: *
connection: keep-alive
content-length: 62
content-type: application/json; charset=utf-8
```

# Appendix D

## Sample Screenshots of Frontend

### Sign In View (if not signed in)

Account

## Sign In

Username

Password

Sign In

Switch to Sign Up

### Sign Up View (if not signed in)

Account

## Sign Up

Username:

Name:

Email:

Preferred Language

English

Password:

Confirm Password:

Sign Up

Switch to Sign In



## Group Members (with group and member selected, from a local admin's perspective)

WeSchedule

Themes

Welcome, Bob Realperson

Logged in as bobsAccount

Account

Groups (Bob's Company)

Log

Group Members

Topics

Selected Member

mylastnameiscool

Joined: 2023-12-11T21:02:05.000Z

Kick from Group

Type *confirm*

Modify Member Permissions

Is Admin

☐

Add Group Member

New Member's Username

Members of Bob's Company:

Admin

bobsAccount

Joined: 2023-12-11T19:43:55.000Z

Select Member

mylastnameiscool

Joined: 2023-12-11T21:02:05.000Z

Select Member

## Messages (with topic selected and translation disabled)

WeSchedule

Themes

Welcome, Bob Realperson

Logged in as bobsAccount

Account

Groups (Bob's Company)

Log

Group Members

Topics (General)

Topic Members

Events

Messages

Refresh

yetAnotherUser:

test

12/13/2023, 8:16:45 PM

yetAnotherUser:

test

12/13/2023, 8:16:47 PM

Translate