NexGate Calls & Meetings: revamp requirements

Version: 0.4 · **Started:** 2026-11-24 · **Status:** being discussed with the owner; five meeting fixes and two call fixes already built (§2), everything else design only

How calls and meetings should work after the revamp: what NexGate keeps, what it learns from WhatsApp, Telegram, Google Meet, Zoom and Teams, and what it reuses from the live revamp. A living document: every topic we discuss is added here.

Today's technical spec and API: `calls_meetings_api_doc.md` (repo root). Where this document disagrees with it, **this document wins** and the API doc is updated when we build. Related: `docs/live/LIVE_REVAMP_REQUIREMENTS.md` (the live tools meetings reuse), `docs/gift/GIFT_SYSTEM_SPEC.md` (moment gifts), `docs/team/WORK_CALLS.md` (work calls).

Marks used

Mark	Meaning
☑	Agreed with the owner
☐?	Proposed, waiting for the owner's answer
☐	Not discussed yet
☒	Decided against
☑✓	Built (commit given)

Rules that apply everywhere

- **Our side only.** This document covers the backend, the notification server and infrastructure. App work is the app team's; they get it through the API change log (owner 2026-11-24).
- **The backend decides, the app shows.** Who can be called, who rings, limits, which buttons appear: all from the backend.
- **A person is identified only by accountId** (never a chat address / JID in a new field).
- **Never reshape an existing response.** New things are added fields or new endpoints; old names keep working until the apps switch.
- **Check real behaviour on staging** (logs and database over `ssh nexgate`) before deciding something is broken or works.

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0. The picture in one page

	Calls (1:1 and group)	Meetings
What it is	A phone call: it **rings**	A **private live**: you **join** at a time, nothing rings
Audio or video	chosen by the caller (audio → video possible)	**no choice: a meeting is a meeting**; everyone switches their own camera and mic
Who	Chat contacts (1:1), group chat members, shops, parcel work calls	Invited people and link holders, signed in
Size	Up to 8 (from settings, C5)	Host + up to 8 speakers + many listeners
Style	**Light, the WhatsApp way**: reactions and raise hand go phone to phone	**Same stage and tools as Audio / Video live**: co-hosts, requests, mute, invites with privacy, chat, polls, questions, selling, gifts
Inside the room	LiveKit (sound, video, data)	LiveKit (everyone is in it)
Tools in the room	API in → backend checks → **LiveKit** `SendData` out	the same
Outside the room (ringing, invites, reminders)	SSE when the app is open, push when closed; later Centrifugo's personal channel	the same

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1. What exists today (checked in code 2026-11-24)

Code: `chat_system/calls_mng` (calls + meetings), `shipping_service/work_calls`, `team_mng/shop_calls`, `chat_system/livekit`, notification server `PushService` / `FcmPushProvider` / `ApnsVoipPushProvider`.

1.1 Calls

	1:1 call	Group call	Shop call	Work call (parcels)
Start	`POST /calls` with a conversation, a person or a shop	from a group chat	customer calls a shop (from its page)	buyer, shop or shipper about one order

	1:1 call	Group call	Shop call	Work call (parcels)
Who rings	the other person	**everyone in the group**	shop terminals + the owner per "Ring on my phone" (always / when nobody's at the shop / never)	the people on the parcel
Limit	—	**8** (`app.livekit.group-max-participants`); a group **over 8 can't call at all** (`CALL_TOO_LARGE`)	first to answer wins	—
Video	□	**off above 4 people** (`video-off-above-participants`)	□	□
Rules	chat contacts only (message requests)	—	shops can't cold-call customers	only while the order is open

- **Life of a call:** `RINGING` (45 s) → `ACTIVE` (someone joined) → `ENDED` with an outcome: `COMPLETED`, `MISSED`, `DECLINED`, `CANCELLED`, `BUSY`, `FAILED`. The server learns joins and leaves from **LiveKit webhooks**, not from phones.
- On ending, a **`CALL_EVENT` message** is written in the chat ("Missed call", "Call 4:12"); `GET /calls` = history (30).
- Already works: joining a group call late **if you were rung**; turning a 1:1 into a 3-way (`POST /calls/{id}/participants`, caller only, contacts only); audio → video mid-call (recorded when a camera appears).
- **Ringing when the app is closed works** (owner 2026-11-24, staging logs: 408 incoming-call pushes in 30 days, all delivered):
  - backend sends `CHAT_INCOMING_CALL` as a **HIGH** push carrying caller name and photo, room, URL and a 10-minute token (answering = one tap, no round trip); for a shop call "answer as the shop" instead of the token;
  - Android: Firebase high priority, **expires with the ring** (45 s), so a late ring never arrives after the call;
  - iPhone: **Apple VoIP push (PushKit)** straight to Apple (Firebase can't send this type), paired with the Firebase token (`DeviceTokenKind.PUSH` / `VOIP`) so the phone rings once; switch `push.apns.voip.enabled`.
- Busy and stuck calls: `isOnAnotherCall` (busy check), `CallTimeoutJob` (ring timeout, stuck ACTIVE after 4 h, OPEN meetings without an end), `MeetingScheduleJob` (opens / closes meetings every 30 s).

1.2 Meetings

- `POST /meetings`: title (required), description, start (`scheduledAt`, empty = now), end (`endsAt`), audio / video, access **INVITED** (a guest list) or **OPEN** (join links), invitees (accountIds), optional chat conversation (writes "Friday 17:00, pricing review" into it).

- States: `SCHEDULED` → `OPEN` (the job opens it at the start) → `ENDED`. **Never rings**; "starting" is a notice.
- Roles: **HOST**, **SPEAKER** (shares the cap of 8), **LISTENER** (no limit; subscribe only, enforced in the token).
- Links: `POST /meetings/{id}/links?role=SPEAKER|LISTENER` (30 days, never HOST); `POST /meetings/join/{token}`.
- Host: promote / demote (`PUT …/participants/role`), end, cancel (before it opens), edit (`PATCH`).
- Notices: `CHAT_MEETING_INVITE`, `_STARTING`, `_UPDATED`, `_ROLE_CHANGED`, `_ENDED`, `_CANCELLED`.
- Screen share: **already allowed in the LiveKit token** for speakers (`screen_share`); only app work. Listeners may send data messages.

1.3 Staging, last 30 days (2026-11-24)

Call	Result	Count
1:1 audio	completed / busy / cancelled / missed / declined	42 / 33 / 32 / 12 / 5
1:1 video	completed / busy / cancelled / missed	16 / 7 / 7 / 1
Group audio	completed / missed / cancelled	18 / 3 / 3
Group video	completed	5
Meetings (video)	completed / still scheduled	22 / 5

Health check (2026-11-24): nothing stuck ringing or active, no meeting open past its end, no scheduled meeting that failed to open, no ended call without an outcome. Found and fixed: §2.

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2. Fixed on 2026-11-24 (?, local on `fet/team`, unpushed)

#	Problem	Fix	Commit
P1	A meeting for **now** was saved `SCHEDULED`; "starting" came up to 30 s late	opens `OPEN` at once	`f183fa52`
P2	Invitees could join **days early** into an empty room	doors open **10 min before** the start (`NOT_OPEN_YET`); the host any time	`f183fa52`
P5	Role change named a person by **JID**	`accountId=` (the old `jid=` still works)	`f183fa52`

#	Problem	Fix	Commit
P7	Edit only title + start; end unchecked; past start became "now"; English words in the notice	edit takes **description** and **end**; end after start (`END_BEFORE_START`); past start refused (`IN_THE_PAST`); notice adds `changedFields` keys	`f183fa52`
P8	Invitees past 8 **quietly** became listeners	create answer adds `speakerLimit` + `invitedAsListeners`	`f183fa52`
B1	**BUSY bug:** a person counted as on a call while only **invited to a meeting** (scheduled, or open without them) or rung by an unanswered **group** call. **29 of 40** BUSY calls in 30 days; one person unreachable for 1:1 calls until 28 Nov	busy = **in a room now** (joined, not left) or **being rung by a 1:1**; replayed on staging data before changing; work calls too	`8299506d`
B2	96 people "joined but never left" in ended calls	when a call ends, everyone still in the room is marked as left	`616346a7`

Docs: `calls_meetings_api_doc.md` ("Changes 2026-11-24"), `docs/changelog/frontend_changelog_2026-11-24.md` §9–§10. Tests: `MeetingFixesTest` (5); suite 620 green.

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3. Real time: which pipe carries what

 Agreed 2026-11-24.

What	Pipe	Why
Inside a call or meeting: pins, coupon drops, polls, requests list, mute, gifts, meeting chat	**LiveKit data**, sent **by our backend** (`SendData` on LiveKit's server API)	everyone in a call or meeting is already connected to LiveKit for sound and video
Reactions and raise hand **in calls**	LiveKit data **phone to phone** (no backend)	light, like WhatsApp
Outside the room: ringing, invites, "starting", reminders, "a call is on · Join"	SSE when the app is open, push when closed; **later Centrifugo's personal channel** (live doc §13.4) once it exists	reaches people not in the room yet

The rule for every tool in a call or meeting:

```
 Host taps Pin ──API──► Backend: checks (her shop's product? price? coupon rules? meeting on?)
· saves it
                                └──LiveKit SendData (server → room) {event: PIN, productId}──►
every phone, within a second
 Someone joins late ──join answer / GET …/pins──► current shelf and pin
```

- Messages carry **a key + an id**, never display text (the phone draws the card from the API; LiveKit data messages are small, ~15 KB).
- **Phones trust only messages sent by the server** for tools (a fake "coupon" from a phone is ignored).
- Taps on a pinned product → normal checkout, recorded as a sale from this meeting (live doc §13.6 sale origins).
- Our `LiveKitClientImpl` already calls LiveKit's server API (list participants, mute, delete room); `SendData` is one more method on it.

Why live is different: live **viewers** watch through **SRS** (a one-way video stream, cheap for thousands) which can't carry messages, so live needs Centrifugo; the host and guests are in LiveKit. In meetings **every listener is a LiveKit participant**, so the data pipe is already there. If a meeting ever had thousands of listeners on SRS, those would need Centrifugo.

	LiveKit (calls, meetings, live stage)	SRS (live viewers)
Kind	two-way room	one-way stream, like TV
Cost per person	high (streams forwarded to each)	very low (copied, cached on edges)
Good for	a few to a few hundred who interact	hundreds to thousands who watch
Carries messages	□ data	□

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4. Calls

4.1 What others do that we don't (from what we know, 2026-11-24)

Others do	Who	Us today
Ring when the app is closed / locked	everyone	□ works (§1.1)
Group call size	WhatsApp up to 32; Telegram very large; Meet 100+	8

Others do	Who	Us today
Pick who to ring in a group	WhatsApp	rings everyone; a group over 8 can't call
"Call ongoing · Join" from the chat	WhatsApp, Telegram	only people rung can join
Add people during any call	WhatsApp, Telegram, Meet	1:1 → 3-way only
"Who can call me"	Telegram (WhatsApp: "silence unknown callers")	only the message-request rule
Missed call → Call back / Message from the notice	WhatsApp, Telegram	plain notice
Call waiting (a second call while on one)	WhatsApp	second caller gets BUSY
Works on strict networks (TURN)	everyone	TURN off on our LiveKit
One **Calls tab**: history + upcoming	WhatsApp	history only, meetings without title / time
Screen share, low data mode, raise hand, reactions	everyone	app work (screen share already allowed by the server)

4.2 Backend list for calls

#	What	How (backend)	Status
C1	Ring when closed	built and working (§1.1)	✅ done
C2	**Pick who to ring in a group**	`POST /calls` gains optional `inviteeAccountIds` (group chat only, members only, up to the limit); only they ring. A group of 30 can call 8 of them	☐
C3	**"A call is on · Join"**	the conversation shows the running call (id, kind, who's in, count); **any member** of the group chat can join while there's room (not only people rung)	☐
C4	**Add people during any call**	anyone in the call adds contacts (group or 1:1), up to the limit; blocks and "who can call me" apply	☐
C5	**Limits that grow**	people per call and "video off above" from **admin settings in the database**, not config; raised without a release	☐

#	What	How (backend)	Status
C6	**"Who can call me"**: everyone / contacts / nobody	privacy setting like gifts and live invites; refused calls look the same as a block to the caller	□□
C7	**Missed-call notice with actions**	the notice carries `actions: [CALL_BACK, MESSAGE]` + ids; the app draws the buttons	□□
C8	**Call waiting**	a second 1:1 call rings with `waiting: true` instead of BUSY; the person ends one and answers, or declines	□□
C9	**TURN on**	turn on TURN in our LiveKit (infra; the spec deviation noted in memory)	□□
C10	**One Calls tab**	`CallResponse` gains title, start, end, my role, access for meetings (fields added, P6); a new "upcoming" list (§6.2)	□□
—	Centrifugo for calls	□ not needed to work; calls move onto Centrifugo's personal channel **after live phase 1** as a tidy-up	□

4.3 Tools in calls

□ Agreed 2026-11-24 (owner: "the call needs those tools as listed in the table").

Tool	1:1 call	Group call (≤ 8)	Backend
Reactions ❤ □□ □□	□	□	none (phone to phone)
Raise hand □	—	□	none (phone to phone)
Mute others (never unmute), remove + block from this call	—	□ whoever started it	server mute / remove through LiveKit
Gifts (moment gifts)	□	□	built (gift spec v6); add place for calls (`GiftPlace.MEETING` exists; calls reuse it or get `CALL`)
Pin a product	□ shop calls ("this one?")	—	API → check → `SendData` (§3)
"Weak network, try a new location"	□	□	none (the phone detects it)

Example: Juma calls Asha → ❤ phone to phone. Asha sends a gift during the call → Juma's gift balance. Juma calls Duka la Mama → the shop pins the red kanga → Juma sees the card in the call → taps → checkout

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5. Meetings are a private live

 Agreed 2026-11-24: a meeting uses **the same stage and tools as Audio / Video live**, but only invited people and link holders get in, and everyone is in LiveKit (§3). One set of rules for live and meetings: built once.

Live tool (live doc)	In meetings	Backend
Reactions (§8.2)		counted and mixed every 2 s, sent by `SendData`
Requests + "who can ask to speak" (X2, X3, X5)		requests list for host and co-hosts
Co-hosts, max 2 (§8.1a)		new role `CO_HOST`: accept requests, mute, remove; can't end
Mute, never unmute; back to listener; remove + block (X4, X6)		server mute / remove through LiveKit
Invites with accept + "Who can invite me" (§8A.8–9)		§7
Chat with role badges (§8.7)		§10
Polls, questions with Me too (§8.5, §8.6)		§10
Gifts (gift spec v6)		`GiftPlace.MEETING` (exists, switched off until built)
Pin, coupon drop, flash price (§7)	a shop's meeting (wholesale session)	§11
Weak network bar, speaker weak-network flag (§9.3 N7, N9)		speaker flag to host
Booking, reminders 24 h / 15 min, upcoming list (§4)		§6
Send listeners to another live / meeting (Y8)	later	—

Example: Duka la Mama holds a **wholesale meeting** for 40 shop owners → Neema is co-host → owners raise hands → a poll "which colour next month?" → Mama Yoyo pins a kanga and drops a 15% wholesale coupon → Asha sends a gift

Meeting topics

#	Topic	Fixes	Status
M1	Invites	P3, P4	§7 (mostly)
M2	My meetings, upcoming, reminders	P6, P9	§6 □□
M3	Roles in the room	P4	§8 □□
M4	Waiting room and locks	new	§9 □□
M5	Chat, polls, questions, reactions	new	§10 □□
M6	Selling and gifts	new	§11 □□
M7	Links and "joined by your link"	new	§12 □□
M8	Limits from settings	new	§13 □□

5a. A meeting is a meeting: no audio / video choice

 Owner 2026-11-24: "we don't need Video / Audio, a meeting is a meeting; people can switch".

- Creating a meeting has **no Video / Audio pick**. Every meeting is **camera-capable**; each person turns their own **camera and mic on or off** during it (Google Meet, Zoom).
- **Today:** `CreateMeetingRequest.kind` exists and defaults to **AUDIO** when empty, which blocks cameras. **After:** the field stays in the request and answer (old apps don't break) but meetings are always created camera-capable.
- **Who may use a camera** stays a backend rule: host, co-hosts and speakers yes; listeners no (token grant). The **"cameras off above N speakers"** limit stays for bandwidth, from settings (M8).
- A host who wants a voice-only meeting uses **"lock cameras"** (§9).
- **Example:** Mama Yoyo creates "Wholesale December" without picking anything → Neema turns her camera on to show fabric → Juma stays voice-only on mobile data → Mama Yoyo taps **Lock cameras** for the price talk

5b. Banner: optional

 Owner 2026-11-24.

App	Banner on a meeting
WhatsApp scheduled call	no (title and people)

App	Banner on a meeting
Google Meet / Calendar	no
Zoom webinars (public sessions)	yes (banner and branding on the sign-up page)
NexGate live	yes (agreed)

- **Optional, never required.** A quick team meeting needs none; a shop's meeting (wholesale session, class, launch) looks better with one.
- Shown wherever the meeting shows: the **invite**, the **chat card**, **My meetings / Upcoming**, the **link preview** (e.g. on WhatsApp).
- **No banner** → the backend returns nothing; the app draws a plain card with the title and the host's (or shop's) photo.
- Backend: optional `coverMediaId` on the meeting, stored and returned as the standard media object (fileId, status, URLs made at response time), like the live's banner (`StreamEntity.coverMediaId`). Set in the create form, changeable in Edit (a new `changedFields` key `BANNER`).
- **Example:** Asha's "Friday pricing review" has no banner → invite shows the title with Asha's photo □ . Duka la Mama's "Wholesale December" has a kanga banner → invite, chat card and WhatsApp preview all show it □

6. M2: My meetings, upcoming, reminders

□□ Proposed (reuses live doc §4).

- `GET /meetings/mine?status=upcoming|ended`: meetings I host or was invited to (accepted or waiting), each with title, start, end, kind, access, **my role**, **my answer** (accepted / waiting), counts (accepted, waiting), and **buttons decided by the backend** ([Join] from 10 min before, [Edit], [Cancel], [Answer], [Copy link]).
- **Calls tab** (C10): history (`GET /calls`) and upcoming meetings in one place; `CallResponse` gains `title`, `scheduledAt`, `endsAt`, `access`, `myRole` for meetings (fields added).
- **Reminders** to people who **accepted**: **24 h before** and **15 min before** (live's `ReminderLead` choices), and "starting now" at the start (exists). Host: "starts in 15 min · get ready".
- **Moved or cancelled:** accepted and waiting people are told (one notice each, keys not English).

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7. M1: Invites

7.1 Today

Asha creates a meeting with Juma, Neema and Rose listed: **they're put straight in** (push + SSE, no accept, no privacy check, only blocks). She can't add people later or take anyone off (P3, P4).

7.2 What others do (researched 2026-11-24)

	Google Calendar / Meet	Zoom	Teams	WhatsApp (scheduled calls)
Answer an invite	Yes / No / Maybe; organiser notified, sees every answer	— (link or registration)	Yes / No / Maybe	—
Guests invite others	on by default, organiser can switch off	—	—	—
Guests see who's invited	on by default, can be switched off	—		attendees
Guests propose a new time	organiser reviews it	—		—
Invite a whole group		—		contacts or groups
People not invited	**knock**: ask, host admits or denies (one by one or all)	**waiting room**; or **signed-in only**; or registration with approval	**lobby**: invited walk in, others wait	anyone with the link
Lesson	—	**passcodes in links leak** (forwarded); signed-in only + waiting room work better	—	creator **told when someone joins** by the link

7.2a Three ways to create a meeting (Google Meet style)

 Owner 2026-11-24: "we need all three; schedule is different; the later link is just a link, no people, no content".

How Google Meet does it (from what we know): "New meeting" → **Start an instant meeting** (you're in at once, a box gives the link and "Add others") · **Create a meeting for later** (a link only) · **Schedule in Google Calendar** (the full form).



```
| ⚡ Start now                        |  ← one tap, you're in
| □□Link for later                   |  ← one tap, just a link
| □□Schedule                         |  ← the full form (below)
└────────────────────────────────────┘
```

	⚡ **Start now**	□□ **Link for later**	□□ **Schedule**
Form	**none**	**none**	the full form
Title	default "Mama Yoyo's meeting" (renamable later)	default	required
Banner, description	—	—	optional
Time	now, no end	**none**: opens when the host joins	a start (and end)
People invited	none at first; **[Add people]** inside (invites, §7.3)	**none**: the host shares the link herself	invites, whole group chat, co-hosts
Guest options	defaults	defaults	chosen in the form
Link holders	wait for the host (waiting room)	wait for the host	as chosen
Reminders, upcoming by time	—	—	□ (§6)
Answer of the create call	the meeting **+ link + the host's join token** (straight into the room)	the meeting **+ link**	the meeting (links on the screen after Create)
Life	ends when the host ends it, or the stale-meeting backstop	link valid **30 days**; unused → closed quietly; each time the host opens it, it works like Start now	as a scheduled meeting

Rules

- A **link for later** is **just a link**: no time, no invites, no reminders. To set a time or invite people, use Schedule.
- The host can open a link-for-later room **any time** within its 30 days; link holders wait in the waiting room until she lets them in.
- Backend: `POST /meetings` gains `mode`: `NOW` · `LINK` · `SCHEDULED` (missing = today's behaviour). `NOW` and `LINK` accept an empty title (default title); `NOW` returns link + host token; `LINK` creates a meeting with **no time** (state stays `SCHEDULED` with no start, opens when the host joins, closed after 30 days if unused).

Examples

- Juma, chatting with a supplier: ⚡ **Start now** → in the room within a second → **Share** → the supplier waits → Juma lets him in □

- Mama Yoyo: □□ **Link for later** → pastes it in her WhatsApp group "meet me on this link tomorrow" → tomorrow she opens it → people waiting get in □
- Duka la Mama: □□ **Schedule** "Wholesale December", Friday 17:00, banner, 30 invites, Neema co-host → reminders 24 h and 15 min → doors open 16:50 □

7.2b The Schedule form (sample, 2026-11-24)

```
┌──────────────────────────────────────────┐
│  [ □□Mama Yoyo ▾ ]   ← Me / □□Duka la Mama
│                                          │
│  □□[ Add a banner (optional) ]           │
│  Title: Wholesale December               │
│  Description: New stock, prices for Dec  │
│                                          │
│  When                                    │
│   [ ⚡ Now ] [ Today 17:00 ] [ Tomorrow 10:00 ]
│   [ □□Custom ]                           │
│  Ends   [ 1 h ✓ ] [ 2 h ] [ No end ]     │
│                                          │
│  ── Who ──────────────────────────────   │
│  Invite  [ Asha × ] [ Neema × ] [ + Add ]│  ← only people who allow you
│          [ □□+ A whole group chat ]      │  ← each member gets their own invite
│  Co-hosts [ Neema × ]  (up to 2)         │
│  People with the link                    │
│   [ Wait for me to let them in ✓ ]       │
│   [ Come straight in ]                   │
│                                          │
│  ── Guests can ──────────────────────    │
│  Invite others                [ OFF ]    │
│  See who's invited            [ ON ]     │
│  Ask to speak  [ Everyone ✓ ] [ People I follow ] [ Only invited ]
│  Start muted                  [ ON ]     │
│                                          │
│  □ 8 can speak; more join as listeners.  │  ← limit from the backend
│                                          │
│             [ □□Create meeting ]         │
└──────────────────────────────────────────┘

          ↓

┌──────────────────────────────────────────┐
│  □ Wholesale December · Fri 5 Dec 17:00  │
```

```
│  Invites sent: 30 · waiting for answers │
│  [ □□Listener link ] [ □□Speaker link ]│
│  [ ✏□ Edit ] [ ✖ Cancel ]               │
└─────────────────────────────────────────┘
```

- No Video / Audio pick (§5a). Banner optional (§5b). In the Schedule form a start of **now** opens at once (P1 built); a later time opens the doors 10 min before (P2 built). One-tap meetings: ⚡ Start now or □□ Link for later (§7.2a).
- **Ends** must be after the start (P7 built); **No end** = the host ends it.
- Links exist only after the meeting is created (on the screen after Create), as with lives.
- Every pill, limit and switch comes from the backend.

7.3 NexGate meeting invites

□ Owner 2026-11-24 ("very nice") for I1–I7; I8 later. Copied from group invites and live invites (live doc §8A.8).

#	Rule
I1	**Answer the invite: Accept / No thanks.** □□ no "Maybe" (proposed, to keep it simple). A **waiting** person **isn't in** the meeting: can't join, gets no meeting notices beyond the invite. The host sees the list □ □ □ with counts
I2	**Host told about answers, grouped:** "Juma and 3 others accepted" once, not one push per person
I3	**Guest options per meeting: "Guests can invite others"** off by default (the host's list stays hers); **"Guests see who's invited"** on by default. Guest invites follow the same privacy setting
I4	**Invite a whole group chat:** every member gets **their own invite** and answers for themself; privacy respected per person
I5	**Invited people walk in, others wait:** link holders who weren't invited go to the **waiting room** (§9); the host can turn on **"Link joins straight in"** for open sessions
I6	**Signed in only** (already our rule: every link needs a NexGate account; blocks apply)
I7	**"Juma joined by your link"**: one quiet notice to the host per person, grouped if many
I8	Propose a new time

Also (from groups and live):

- Who invites: the **host** (at create or later); **co-hosts** only people already in the meeting; guests only if I3 is on.

- **"Who can invite me"**: everyone / contacts only / nobody, default **contacts only**. □□ One setting shared with live ("Who can invite me to lives and meetings") or a separate one: **open question Q1**.
- Refused: always "This person can't be invited" (never block vs setting); the picker hides them.
- **20 invites a day** per person (as groups and live); inviting a whole group chat counts as one.
- **Later changes:** add people until it ends; **withdraw** a waiting invite; **remove** someone who accepted ("removed from the meeting").
- Expiry: when the meeting ends or is cancelled.
- States: **waiting · accepted · declined · withdrawn · removed · expired**.
- More than the speaker limit accepted → the rest are listeners; the host is told (P8, built).

Example

- Mama Yoyo creates "Wholesale December" and invites her group chat "Kanga Sellers" (30 people) → 30 invites.
- 18 accept → she gets "Asha and 17 others accepted" once. 4 No thanks. 8 haven't answered.
- "Guests can invite others" is off → Asha can't add her cousin; she sends him the **link** → he lands in the **waiting room** → Neema (co-host) admits him → Mama Yoyo: "Baraka joined by your link" □
- Rose ("Nobody") never appears in Mama Yoyo's picker □ . Wednesday Mama Yoyo withdraws Juma's unanswered invite □

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8. M3: Roles in the room

□□ Proposed (live doc §8A.4, §8.1a).

Role	Can
Host	everything: end, cancel, edit, invite, roles, co-hosts, locks, waiting room, selling tools (if a shop)
Co-host (max 2)	accept requests, admit from the waiting room, mute, move to listener, remove, invite people already in; **can't end** or use the host shop's money tools
Speaker	talk, camera (within the video limit), screen share
Listener	listen, react, chat, raise hand □

- **Requests:** "Who can ask to speak": everyone (default) / people I follow / only people I invite; □ for listeners; □ "next" for speakers; host or co-host accepts.
- **Mute, never unmute** (only the person turns their own mic back on). **Back to listener**. **Remove** (can't come back to this meeting) + **block**.

- New speakers start muted (default on).

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9. M4: Waiting room and locks

□□ Proposed (Google Meet, Zoom, Teams).

- **Waiting room:** link holders who weren't invited **ask to join**; host and co-hosts see the list and **Admit / Deny**, one by one or **Admit all**. Switch per meeting: **"Link joins straight in"** (off by default).
- **Locks** (host and co-hosts): **mute all**; **lock mics** (only host, co-hosts and people they allow can talk); **lock cameras**; **lock chat**; **lock screen share** (host and co-hosts only). Locks never apply to host and co-hosts.
- **Lock the meeting:** nobody new gets in (invites and links stop working until unlocked).
- **End for everyone** (exists).

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10. M5: Chat, polls, questions, reactions

□□ Proposed (live doc §8.2, §8.5–8.7).

- **Meeting chat** with role badges (Host / Co-host / □□ / On stage), reply with a quote, pin a comment; kept while the meeting is on, through `SendData` (and readable on join).
- **Polls** (2–4 options, products allowed, timer or open) and **questions** with Me too, as live.
- **Reactions** counted and mixed every 2 s.
- No recording (as live §2).

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11. M6: Selling and gifts

□□ Proposed.

- **Selling** in a shop's meeting: pin a product or ticket, coupon drop, flash price, group buy (live doc §7.2 rules: one group system, item's own clock), instalments on the card; **only the shop sells**; sales recorded with origin "meeting" (sale origins table).
- **Gifts:** moment gifts with `GiftPlace.MEETING` (exists, off until built); receivers = host, co-hosts, speakers; gift cards from a meeting like from a live.
- Pipe: §3 (API → check → `SendData`).

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12. M7: Links

◫ Proposed.

- Speaker link and listener link (exist; 30 days, never host). **Link holders not invited → waiting room** unless "Link joins straight in".
- **"Juma joined by your link"** notice to the host (I7), grouped.
- Host can **reset a link** (the old one stops working) and see how many joined by each link.
- Blocks apply to links (exists).

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13. M8: Limits from settings

◫ Proposed (with C5).

- Speakers per meeting (8), listeners per meeting, people per call (8), video off above (4): **admin settings in the database**, returned to the app; raised without a release.

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14. Still open from the code review

#	Problem	Where it goes
P3	Invitees put straight in, no accept, no privacy	§7
P4	No adding people later, no remove, no mute others	§7, §8
P6	Meeting answer lacks title, time, access, my role; no upcoming list	§6, C10
P9	Only "starting" reminder	§6
P10	Never tested on real phones; TURN off	C9 + phone test

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15. Open questions waiting for the owner

#	Question	My suggestion

Q1	"Who can invite me": **one setting for lives and meetings**, or two?	one ("Who can invite me to lives and meetings"), contacts only
Q2	Invite answers: Accept / No thanks only, or add **Maybe**?	no Maybe
Q3	C2–C10 for calls: all, and in which order?	C9 (TURN), C2, C3, C4, C5, C6, C7, C10, C8
Q4	M2–M8 for meetings: agree one by one	M2 → M3 → M4 → M5 → M6 → M7 → M8

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16. What the backend needs

16.1 Keep

Calls start / answer / end / add person, ring timeout, settle, `CALL_EVENT`, webhooks, push (Firebase + Apple VoIP), shop and work calls, meetings create / join / links / roles / end / cancel / edit, the schedule job.

16.2 Change (fields only added)

What	Change
`POST /calls`	+ `inviteeAccountIds` (C2)
Group call join	any group member while there's room (C3)
Add person	any call, anyone in it (C4)
`CallResponse`	+ `title`, `scheduledAt`, `endsAt`, `access`, `myRole` for meetings (C10, P6)
Missed-call notice	+ `actions` (C7)
Second 1:1 call	rings with `waiting: true` instead of BUSY (C8)
Limits	from admin settings (C5, M8)
Meeting create	+ `mode` (`NOW` / `LINK` / `SCHEDULED`, §7.2a): `NOW` returns link + host token, `LINK` has no time and no invites (30 days); empty title allowed for `NOW` / `LINK`; + optional `coverMediaId` (banner, §5b; also in Edit); no audio / video choice: always camera-capable (`kind` accepted, ignored; §5a); invitees become **invites** (waiting) instead of participants; + `guestsCanInvite`, `guestsSeeInvited`, `linkJoinsStraightIn`, `whoCanAskToSpeak`, `inviteChatId` (whole group chat)

16.3 New

Topic	Endpoints / pieces
Invites	answer (accept / no thanks), my invites list, add / withdraw / remove, grouped answers to the host, "Who can invite me" (shared with live, Q1), 20 a day
My meetings	`GET /meetings/mine`, Calls tab upcoming, reminders 24 h / 15 min (live `ReminderLead`)
Roles	`CO_HOST`; requests list; mute (server), back to listener, remove + block
Waiting room and locks	ask to join, admit / deny / admit all, locks, lock meeting
In-room tools	`SendData` in `LiveKitClient`; pins, polls, questions, chat, reactions, gifts, selling (API in → check → `SendData`)
Calls	"Who can call me" (C6); running call on the conversation (C3)
Notifications (workbook)	meeting invite answered (grouped), removed, invite withdrawn, reminder 24 h / 15 min, host get ready, joined by your link, waiting room knock (to host), call waiting

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17. Sources (read 2026-11-24)

- WhatsApp: new ways to plan ahead and take part, Engadget: schedule group calls, The National: scheduling, reactions, raise hand
- Google Meet: up to 25 co-hosts, host controls, lock audio and video
- Google Calendar: what others can do, track responses, invite groups
- Zoom: meeting security (Illinois), waiting room and passcode (Duke), passcode shown after registration, API security options
- Telegram, Teams: from what we know, not re-read.
- NexGate code and staging (2026-11-24): `chat_system/calls_mng`, `chat_system/livekit`, notification server push, staging `calls` / `call_participants` tables and notification server logs.

Change log

Version	Date	What

0.1	2026-11-24	First write-up: today's calls and meetings, staging numbers, the seven fixes built today (P1, P2, P5, P7, P8, BUSY, left time), real-time pipes (LiveKit in the room, `SendData` from the backend; Centrifugo only for live viewers), calls C1 done and C2–C10, tools in calls, meetings as a private live with the live tools, M1 invites (I1–I7 agreed, research on Google, Zoom, Teams, WhatsApp), M2–M8 proposed, open questions Q1–Q4, backend list
0.2	2026-11-24	§5a a meeting is a meeting: no Video / Audio choice, everyone switches their own camera and mic, `kind` ignored for meetings; §7.2a the create form drawing
0.3	2026-11-24	§5b optional banner (`coverMediaId`, like the live banner; where it shows; plain card without one); form updated
0.4	2026-11-24	§7.2a three ways to create (⚡ Start now, □□ Link for later = just a link, □□ Schedule = the full form), Google Meet comparison, `mode` on create

Revision #2
Created 24 November 2026 20:51:15 by Admin Qbit
Updated 24 November 2026 21:02:08 by Admin Qbit