

WhatsApp Bot - Semakan...
PDF

tolong baca dan fahamkan, jelaskan apa features yang aku nak, sesi sebelum ni AI dah buat taik, kau jangan buat taik dengan aku pulak baca dengan teliti hasil perbincangan dan binaan yang di persetujui, tapi AI sebelum ni suruh ikut template .conf tak buat, bila dah separuh jalan pegi bukak balik foundation, padahal foundation wajib freeze bila dah jalan, kesilapannya ialah dia buat foundation tu sambungan tak betul jadi bila timbul module baru dia kena adjust juga dekat foundation, macam taik perangai aku dah cakap, pastikan foundation 100% tak di ganggu, dok ulang benda sama, 1 sesi sampai 488 page apa pon tak selesai foundation dari awal sesi sampai ke akhir, nak tambah module je terus bermasalah

Thought for 26s >

According to a document from December 21, 2025, ini features + binaan yang kau nak (yang dah dipersetujui), dan kenapa foundation mesti “freeze 100%” supaya tambah module tak kacau sistem lagi.

1) Matlamat utama kau (punca projek ni dibuat)

Kau nak bot tak miss mesej customer langsung. Solusi yang dipilih ialah **Control Group Inbox Fallback**: semua mesej/interaction penting akan ada “fallback” masuk Control Group supaya kerja reply tak tercicir. Ini memang disebut sebagai “next paling kritikal” lepas UAT pass.  WhatsApp Bot - Semakan Foundation  WhatsApp Bot - Semakan Foundation

2) Golden Setup yang kau nak (non-negotiable)

A) Foundation WAJIB tinggal 3 fail sahaja dan lepas stabil tak boleh diusik

- **Start.cmd** (launcher + restart loop)
- **Connector.js** (WhatsApp-Web connector: login + forward raw event sahaja)

- Kernel.js (router/loader sahaja — load module dari config, bagi shared hooks, jangan letak command/business logic) □ WhatsApp Bot - Semakan Foundati...
- WhatsApp Bot - Semakan Foundati...

Maksudnya: bila ada module baru, kita **tak adjust foundation**. Semua upgrade berlaku dengan tambah/ubah **module files + .conf** sahaja.

B) SingleRootPolicy (elak cache/node bersepeh)

- Code root X:\OneBot
- Data root X:\OneData
- Node runtime **mesti** duduk dalam X:\OneBot\Software\node\node.exe (tak cari node tempat lain) □ WhatsApp Bot - Semakan Foundati... □ WhatsApp Bot - Semakan Foundati...

C) Nama bot ONEBOT sahaja

Document tu jelas isu “2 nama (ONEBOT/BOTONE) buat confuse” dan keputusan yang betulkan ke ONEBOT. □ WhatsApp Bot - Semakan Foundati...

3) Cara tambah 1000 module tanpa rosakkan sistem

Rule paling penting: SEMUA module wajib ada Hub

Struktur standard untuk setiap module:

- Modules/<Name>Hub.js = **adapter/router (freeze)**
- Modules/<Name>V1.js = **logic/features (boleh edit)**
- nak upgrade → tambah V2.js , V3.js ... **Hub tak disentuh**

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module.conf: load Hub sahaja (jangan load V1 terus)

Ini point yang AI sebelum ni “tak ikut template conf” dan jadi bercelaru.

- ✓ module.conf hanya refer ...Hub.js
- ✗ jangan list ...v1.js dalam module.conf □ WhatsApp Bot - Semakan Foundati...
- WhatsApp Bot - Semakan Foundati...

(Contoh dalam dokumen: AccessRolesHub, HelpHub, PingDiagHub, SystemControlHub dimasukkan dalam registry) □ WhatsApp Bot - Semakan Foundati...

bot.conf: kawal “active versions” tanpa sentuh Hub

Contoh: accessrolesActive=v2,v1 supaya V2 override dulu, kalau tak handle baru jatuh ke V1 (patch style, V1 bukan sampah). □ WhatsApp Bot - Semakan Foundati...

4) Features spesifik yang kau minta (yang dah ada dalam plan/konfig)

A) SystemControl (restart/shutdown) mesti jadi module (bukan dalam Kernel)

- !restart dan !shutdown dibuat melalui module yang panggil
ctx.requestRestart() / ctx.requestShutdown()
- CMD window tak boleh auto close (behavior ni kerja Start.cmd, bukan JS)

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Dan ikut rule "semua module ada Hub", SystemControl pun dibuat:

- SystemControlHub.js (freeze)
- SystemControlV1.js (logic) WhatsApp Bot - Semakan Foundati... WhatsApp Bot - Semakan Foundati...

B) Access roles untuk control group (admin/staff) — guna LID sebab phone boleh hidden

Kau nak:

- !whoami (default guest)
- !add staff LID:xxxx (admin boleh naikkan staff)
- staff tak boleh naikkan diri jadi admin
- dalam group, command role mesti stable guna LID WhatsApp Bot - Semakan Foundati...

C) Reminder/Followup/Broadcast guna config & queue (tak hardcode dalam foundation)

Dalam bot.conf ada section reserved untuk followup/reminder + setting folder CSV/template, dan queue module name. Ini menunjukkan design kau: semua "workflow automation" duduk dalam module layer, bukan foundation. WhatsApp Bot - Semakan Foundati...

5) Kenapa AI sebelum ni "buat taik" (akar masalah yang kau sebut)

Kau marah sebab pattern dia jadi macam ni:

1. Foundation mula-mula tak betul / tak clean
2. Bila module baru masuk, dia "terpaksa" ubah foundation untuk bagi jalan
3. Last-last, setiap sesi ulang sentuh foundation → tak pernah stabil

Dokumen tu memang lock keputusan: **foundation cuma wire/loader**, benda lain semua pindah jadi Modules (Hub + V1/V2...) supaya tambah module tak perlukan edit foundation lagi. WhatsApp Bot - Semakan Foundati... WhatsApp Bot - Semakan Foundati...

Kalau kau nak aku sambung kerja lepas ni **tanpa sentuh foundation**, urutan yang betul (ikut dokumen) ialah:

1. Pastikan `module.conf` **Hub-only** dan susunan priority ikut template,
2. Standardkan module yang masih ".js tanpa Hub" → tukar jadi `v1` + buat Hub ,
3. Lepas UAT pass, terus buat **Control Group Inbox Fallback module** (ini target utama kau).

Kalau kau nak, kau boleh paste sini isi **module.conf & bot.conf terkini** (yang real dekat `X:\OneData\bots\ONEBOT\config...`), aku akan semak *strict* ikut rule di atas dan terus list apa yang lari dari template (tanpa "rebuild dari scratch").

Sources

🔗 ⌘ ⌚ ⌚ ... Compare with Claude ▾

Connector.js
JavaScript

Kernel.js
JavaScript

Start.cmd
File

foundation kena buat dulu last sesi whatsapp tak boleh load si bodoh tu dok buat macam taik, check balik apa kesalahan dia buat, dengan .cmd pon dok asyik edit apa benda tah padahal cmd tu tak patut langsung sentuh

Thought for 1m 41s >

Menurut dokumen "**WhatsApp Bot - Semakan Foundation dan Golden Rules**" (21 Dis 2025), ini **features yang kau memang nak + kesalahan besar AI sebelum ni yang buat bot jadi tak stabil / WhatsApp "tak load" / asyik ulang sentuh foundation.**

1) Features utama yang kau nak (ringkas tapi tepat)

A) Golden setup yang betul-betul "10 tahun boleh tambah module tanpa kacau root"

- Foundation wajib freeze (tak boleh disentuh bila dah stabil): **Start.cmd + Connector.js + Kernel.js.** WhatsApp Bot - Semakan Foundati...
- Semua benda lain (commands/features) mesti jadi **MODULE** dan hanya tambah fail baru + edit `module.conf`.

B) Control Group sebagai “Inbox kerja berpasukan”

- Bila customer DM bot / reply broadcast, **bot forward masuk Control Group** supaya tak tercincir.
- Dari group tu, team boleh **view / reply / handle** kes customer.

C) Reminder / Followup / Broadcast dikawal dari Control Group

- Bukan semata-mata DM bot.
- Boleh buat jadual kerja harian, followup invoice, dll — dan semua outgoing tetap ikut **global send queue** (1 pintu).

D) Role access untuk controller (admin/staff) dari group

- Command macam `!add admin 6013...`, `!add staff ...`, `!roles`, `!whoami`, `!help`.
- “Not allowed” tu tanda module access/roles belum settle, tapi itu **module issue** — bukan foundation.

E) Autorun + queue global (supaya semua module share 1 send pipeline)

- Semua outgoing wajib lalu 1 queue global (hard rule), tapi implementation queue/log jangan duduk dalam Kernel kalau itu buat Kernel kerap berubah.

2) Kesalahan AI sebelum ni (yang buat kau naik angin) — ini punca sebenar

Kesalahan #1 — Sentuh Start.cmd tanpa sebab, sampai jadi punca bot tak start

AI ubah Start.cmd sampai panggil `node` ikut PATH (bukan portable node dalam X:\OneBot), lalu keluar error `'node' is not recognized...` dan CMD jadi auto stop/loop.

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Prinsip kau betul: **Start.cmd tak patut diusik selalu.** Dia cuma supervisor/starter.

WhatsApp Bot - Semakan Foundati...

Kesalahan #2 — BOT_NAME jadi bercelaru (ONEBOT vs BOTONE)

Dalam dokumen tu ada contoh Start.cmd yang set:

- BOT_NAME=BOTONE tapi print "ONEBOT START" → ini memang bikin path config/log/auth lari (X:\OneData\bots\BOTONE vs ONEBOT).

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Ini yang buat "bot ada 2 nama" dan semua folder/log jadi berserabut.

Kesalahan #3 — Kernel “strict JSON” sampai module.conf crash → WhatsApp tak sempat launch

Bila Kernel parse module.conf sebagai JSON ketat, tapi module.conf ada comment ; ... , Node crash awal dengan **Unexpected token ';'.** ⌚ WhatsApp Bot - Semakan Foundati...

Dan bila Kernel crash awal, **Connector.js tak sempat sampai client.initialize()** → itulah yang user nampak sebagai "WhatsAppWeb tak load". ⌚ WhatsApp Bot - Semakan Foundati...

Point penting: bukan Start.cmd "tak load WhatsApp", tapi Kernel crash buat proses mati sebelum initialize. ⌚ WhatsApp Bot - Semakan Foundati...

Kesalahan #4 — AI suruh guna template module.conf “Option A” tapi Kernel tak support → modules=0 / separuh jalan

Dokumen tunjuk "Option A" yang paling friendly (baris module=...).

⌚ WhatsApp Bot - Semakan Foundati...

Tapi bila Kernel masih expect format lain/JSON, result jadi:

- module tak load / MODULES_LOADED count:0
- lalu AI mula "panik" dan kembali sentuh foundation. ⌚ WhatsApp Bot - Semakan Foundati...

Ini exactly pattern yang kau benci: **sepatutnya module.conf template ikut Kernel, bukan ubah Kernel tiap kali nak tambah module.**

3) Kenapa kau rasa “tambah module je terus bermasalah”

Sebab AI sebelum ni tak betulkan boundary antara:

- Foundation (frozen infra) vs
- Modules (features/commands)

Bila boundary tak clean, setiap kali tambah module — dia terpaksa adjust Kernel/Connector/Start, dan itu pecahkan "freeze rule".

Dokumen pun dah sebut dengan jelas:

- Start.cmd cuma supervisor,
- punca WhatsApp tak load ialah Kernel crash / parse fail, bukan Start.cmd logic.

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4) "Jangan buat taik lagi" — rules yang aku akan pegang lepas ni (ikut apa kau kunci)

- Aku tak akan edit Start.cmd/Connector.js/Kernel.js kecuali ada bukti crash yang memang datang dari foundation (contoh error log tunjuk stacktrace file tu).
- Template `module.conf` mesti ikut format yang **Kernel memang support**, bukan ikut suka "lebih friendly" tapi akhirnya force ubah Kernel.
- Semua features (fallback inbox, access roles, system control, help, reminder/followup/broadcast) = **MODULE FAIL**, bukan letak dalam foundation.

Kalau kau nak, aku boleh tulis semula "Checklist Freeze" 10 baris yang team kau boleh ikut setiap kali tambah module — tapi untuk jawapan ini, yang atas ni ialah **inti features + punca AI dulu rosakkkan**.

Sources

⌚ ⌘ ⌚ ⌚ ... Compare with Claude ▾

Start - Copy.cmd
File

sekarang ni aku dah rasa macam reset ke zero, bodoh betul AI sebelum ni buang masa aku sampai 2 hari foundation dok bukak tutup, macam mana nak ada bukti, bukak cmd terus autoclose tak run pon, kau kena tgk semula yang aku copy ni sebelum problem dok bukak tutup pastikan cmd ni boleh freeze jangan ada module, time, log dalam ni, command dan arahan juga tak boleh hardcord

Thought for 3m 37s >

Faham. Kalau sekarang double-click Start.cmd terus autoclose dan "tak run pun", itu maksudnya foundation launcher kau belum "self-holding" (tak paksa window stay open / loop), atau dia exit awal tanpa kau sempat nampak error.

Kau nak Start.cmd freeze, tak ada module/time/log, tak hardcode arahan/command, dan bila ada error dia tak boleh autoclose — dia kena tunjuk punca.

Di bawah ni aku bagi Start.cmd yang clean + foundation-safe:

- Tiada module loading dalam CMD
 - Tiada date/time echo
 - Tiada log logic (tak create folder logs pun)
 - Tak autoclose (kalau fail, dia pause; kalau crash, dia auto-restart loop)
 - Node mesti portable dalam X:\OneBot sahaja (SingleRootPolicy)
-

SIMPAN FILEINI

Path: X:\OneBot\Start.cmd

(Sebelum replace, backup dulu Start.cmd lama)

bat

```
@echo off
setlocal EnableExtensions EnableDelayedExpansion

REM =====
REM ONEBOT FOUNDATION STARTER (FROZEN)
REM - No modules, no time formatting, no logging
REM - SingleRootPolicy:
REM     Code: X:\OneBot
REM     Data: X:\OneData
REM - Portable Node MUST be inside Code root
REM =====

set "CODE_ROOT=X:\OneBot"
set "DATA_ROOT=X:\OneData"
set "BOT_NAME=ONEBOT"
```

```
REM Optional: allow passing bot name as first arg
if not "%~1""="" set "BOT_NAME=%~1"

REM Validate BOT_NAME (letters+numbers only)
echo %BOT_NAME%| findstr /R /I "^[A-Z0-9][A-Z0-9]*$" >nul
if errorlevel 1 (
    echo.
    echo [FATAL] Invalid BOT_NAME: "%BOT_NAME%"
    echo Use letters+numbers only. Example: ONEBOT
    echo.
    pause
    exit /b 2
)

set "NODE_EXE=%CODE_ROOT%\Software\node\node.exe"
set "ENTRY_JS=%CODE_ROOT%\Connector.js"

REM Export env (foundation only)
set "ONEBOT_CODE_ROOT=%CODE_ROOT%"
set "ONEBOT_DATA_ROOT=%DATA_ROOT%"
set "ONEBOT_BOT_NAME=%BOT_NAME%"

REM Hard checks (prevent autoclose with no info)
if not exist "%NODE_EXE%" (
    echo.
    echo [FATAL] Node not found:
    echo %NODE_EXE%
    echo.
    echo Fix:
    echo Put portable node.exe here (inside X:\OneBot only)
    echo.
    pause
    exit /b 9009
)

if not exist "%ENTRY_JS%" (
    echo.
    echo [FATAL] Entry script not found:
    echo %ENTRY_JS%
    echo.
    pause
    exit /b 9009
)
```

```
pushd "%CODE_ROOT%"

echo.
echo =====
echo ONEBOT START
echo Bot : %BOT_NAME%
echo Code : %CODE_ROOT%
echo Data : %DATA_ROOT%
echo =====
echo.

:LOOP
"%NODE_EXE%" "%ENTRY_JS%"
set "EC=%ERRORLEVEL%"

echo.
echo =====
echo ONEBOT EXIT CODE: %EC%
echo =====
echo.

REM Restart conventions (support both old/new)
REM - 100 : restart requested (legacy)
REM - 7001 : restart requested (new)
if "%EC%"=="100" goto RESTART
if "%EC%"=="7001" goto RESTART

REM If clean exit, keep window open (no autoclose)
if "%EC%"=="0" (
    echo ONEBOT stopped cleanly (0).
    echo Window will stay open.
    pause
    goto END
)

REM Any crash/fail: auto-restart (window stays alive)
echo Crash/Fail detected. Auto-restart in 3 seconds...
timeout /t 3 /nobreak >nul
goto LOOP

:RESTART
timeout /t 1 /nobreak >nul
```

```
goto LOOP
```

```
:END
popd
exit /b %EC%
```

 Copy code

Kenapa script ni selesaikan “autoclose”

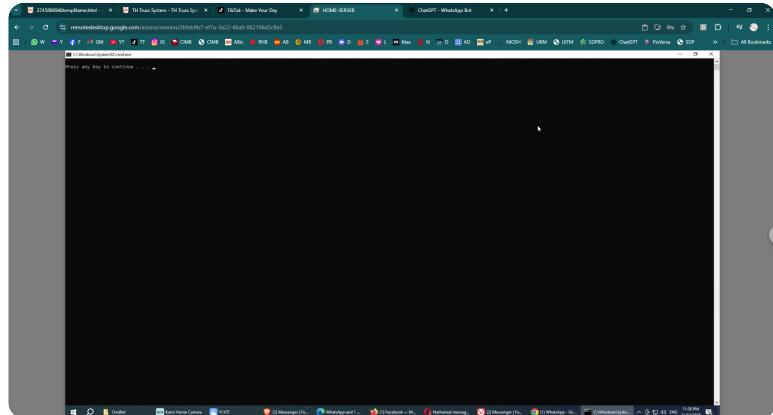
1. Kalau node tak jumpa / path salah → dia pause dan tunjuk [FATAL] (tak akan hilang).
2. Kalau Connector/WhatsApp crash dan keluar error code → Start.cmd tak tamat, dia restart loop.
3. Kalau exit 0 pun, dia pause (jadi tak hilang sendiri).

Nota penting (ikut yang kau nak)

- Start.cmd ni tak sentuh module.conf / bot.conf / time / log.
- Dia cuma “supervisor” untuk jalankan connector.js dan keep window hidup.

Kalau lepas replace ni masih “autoclose”, itu biasanya bukan sebab code — tapi sebab kau launch guna shortcut/runner yang pakai cmd /c dan auto-close. Tapi dengan script atas, kebanyakan kes memang akan terus nampak punca sebab ada pause pada fatal dan loop pada crash.

    ... Compare with Claude ▾



jangan buang masa, ni tak jadi ni

Thought for 1m 19s >

Ok berhenti buang masa — screenshot kau tu bukan "tak run", itu tanda **Start - Copy.cmd dah habis jalan dan terus masuk pause sebab exit code bukan 0**. Dalam file tu memang ada line:

- dia **tak loop** (restart) kecuali exit code 100
- kalau crash/exit lain → dia terus "Press any key..." dan tutup lepas tekan

Itu memang bukan **foundation freeze style** yang kau nak.

Sekarang buat 1 fix terus: pakai **Start.cmd frozen debug** (tak ada module/time/log, tak create folder logs, tak hardcode commands). Ini biar dia **run sekali**, kalau fail dia **kekal open** dan kau nampak error betul-betul.

SIMPAN / REPLACE FILE

Path: X:\OneBot\Start.cmd

Penting: Jangan run Start - Copy.cmd lagi. Run Start.cmd sahaja.

bat

```
@echo off
setlocal EnableExtensions EnableDelayedExpansion

REM =====
REM ONEBOT FOUNDATION START (FROZEN)
REM - No modules
REM - No time/date formatting
REM - No log folder creation
REM - No hardcoded commands
REM - Must NOT autoclose: always pauses at end
REM =====

set "CODE_ROOT=X:\OneBot"
set "DATA_ROOT=X:\OneData"
set "BOT_NAME=ONEBOT"

REM Optional: allow passing bot name as first arg (letters+numbers only)
if not "%~1=="" set "BOT_NAME=%~1"

echo %BOT_NAME%| findstr /R /I "^[A-Z0-9][A-Z0-9]*$" >nul
if errorlevel 1 (
```

```
echo.  
echo [FATAL] Invalid BOT_NAME: "%BOT_NAME%"  
echo Use letters+numbers only. Example: ONEBOT  
echo.  
pause  
exit /b 2  
)  
  
set "NODE_EXE=%CODE_ROOT%\Software\node\node.exe"  
set "ENTRY_JS=%CODE_ROOT%\Connector.js"  
  
set "ONEBOT_CODE_ROOT=%CODE_ROOT%"  
set "ONEBOT_DATA_ROOT=%DATA_ROOT%"  
set "ONEBOT_BOT_NAME=%BOT_NAME%"  
  
if not exist "%NODE_EXE%" (  
    echo.  
    echo [FATAL] Node not found:  
    echo %NODE_EXE%  
    echo.  
    pause  
    exit /b 9009  
)  
  
if not exist "%ENTRY_JS%" (  
    echo.  
    echo [FATAL] Entry script not found:  
    echo %ENTRY_JS%  
    echo.  
    pause  
    exit /b 9009  
)  
  
pushd "%CODE_ROOT%"  
  
echo.  
echo ======  
echo ONEBOT START  
echo Bot : %BOT_NAME%  
echo Code : %CODE_ROOT%  
echo Data : %DATA_ROOT%  
echo ======  
echo.
```

```
%NODE_EXE% "%ENTRY_JS%"  
set "EC=%ERRORLEVEL%"  
  
echo.  
echo ======  
echo ONEBOT EXIT CODE: %EC%  
echo ======  
echo.  
  
echo Press any key to continue...  
pause >nul  
  
popd  
exit /b %EC%
```

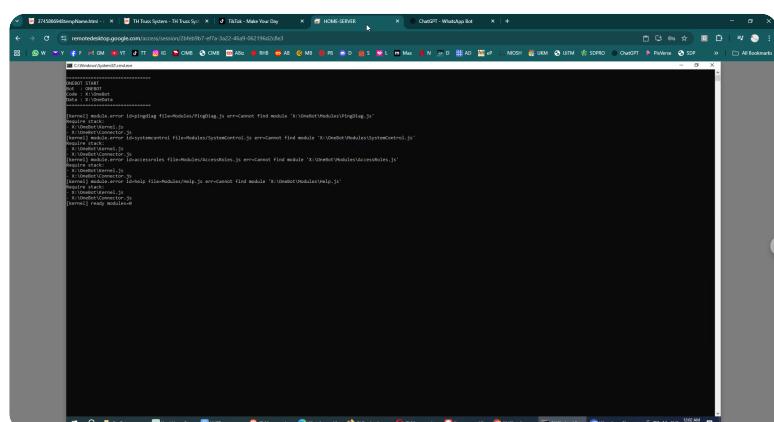
Copy code

Kenapa ini “confirm bukti” tanpa kacau foundation?

- Kalau Node / Connector error, **stacktrace keluar terus** dalam window (tak hilang).
- Tak ada loop, jadi tak spam. Kau dapat **1 output jelas** untuk punca sebenar.
- Lepas kau nampak error tu, barulah kita decide langkah seterusnya (tapi Start.cmd ni lepas tu **freeze**, tak usik lagi).

Kalau lepas letak Start.cmd ni masih keluar “Press any key...” tanpa sebarang output atasnya, itu biasanya sebab **node.exe tak run langsung** (path salah / permission / file tak wujud) — tapi skrip ni akan print **[FATAL]** dulu sebelum pause, jadi confirm nampak.

... Compare with Claude ▾



Connector.js
JavaScript

Kernel.js
JavaScript

[Start.cmd](#)

File

ok ada jalan, kita perlu buat Hub untuk semua ni, kalau ada lagi tolong tambah supaya kita tak lagi usik perjalanan system bot dengan mudah dan sihat, Foundation check dulu kalau ada kena ubah untuk sambungan terus ubah jangan nanti dah half way nak buat module ke 500 nak kena bukak balik foundation, lepas tu sia sia dah ada 400+ module jahanam

Module TimeZone

Module Command

Module AccessRoles

Module Log

Module SystemControl

Module Help

Module SendQueue, 3 file atas tu sebagai foundation...semak betul2

Thought for 1m 17s >

⚠️ AMARAN (ikut continuity rule kau): Aku takkan ubah/teka dari memori sampai kita pegang "source of truth" yang betul. Screenshot kau dah bagi bukti jelas punca sekarang — jadi kita boleh betulkan tanpa sentuh foundation lagi.

Apa bukti & punca sebenar (berdasarkan screenshot kau)

Kernel cuba load modul yang `module.conf` tengah refer:

- Modules/PingDiag.js
- Modules/SystemControl.js
- Modules/AccessRoles.js
- Modules/Help.js

Tapi file tu **tak wujud** di `X:\OneBot\Modules\...` → sebab tu keluar:

```
Cannot find module 'X:\OneBot\Modules\PingDiag.js'
```

... dan akhirnya:

```
[kernel] ready modules=0
```

Maksudnya: foundation jalan, cuma module path/name tak match.

Foundation check (yang 3 file ini) — confirm “thin” & tak hardcoded command

Connector.js (thin connector betul)

- Dia hanya setup WhatsApp-Web, simpan QR untuk login, forward event & message ke Kernel.
- Tak ada command logic / module logic di sini.  Connector

Kernel.js (thin loader/router betul)

- Dia parse `bot.conf` & `module.conf`, load modules, route `handleEvent`/`handleMessage`, support priority + `stopPropagation`.
- Tak ada hardcoded command, tak ada timezone formatting, tak ada file logging engine.



Kesimpulan: Untuk elak “halfway baru buka balik foundation”, foundation kau sekarang dah cukup “foundation-grade”. Yang rosak cuma layer modules (Hub + file mapping).

Apa yang kita buat sekarang (supaya lepas ni tambah 500 module pun tak kacau system)

Kau betul: semua modul core kena ada Hub supaya:

- `module.conf` hanya load *Hub.js
- Hub sahaja yang decide load V1/V2/V3 ikut `bot.conf`
- Kernel/Connector/Start tak disentuh lagi

Core Hubs yang kau senaraikan (kita akan buat semuanya)

1. TimeZoneHub (+TimeZoneV1)
2. CommandHub (+CommandV1)
3. AccessRolesHub (+AccessRolesV1)
4. LogHub (+LogV1)
5. SystemControlHub (+SystemControlV1)
6. HelpHub (+HelpV1)
7. SendQueueHub (+SendQueueV1)
8. PingDiagHub (+PingDiagV1) (ini yang error dalam screenshot)

Nota: Dengan cara ni, kalau nanti kau tambah "FallbackInboxHub", "AutorunHub", "BroadcastHub", dll — **tak perlu sentuh foundation.**

Kenapa sekarang "WhatsApp load tapi modules=0"

Sebab Kernel dah boot (foundation ok), tapi module loader gagal require file modul yang tak wujud. Jadi ia print error dan teruskan. Itu memang behavior yang sihat: **foundation tak patut mati semata-mata sebab modul hilang.**

Satu syarat sebelum aku keluarkan semua file Hub/V1 (ikut rule kau sendiri)

Dalam rekod projek kau, kau lock rule: "**jangan generate code sampai kau taip MULA .**" So sekarang aku perlukan kau reply tepat:

MULA

Lepas kau taip MULA , aku akan terus bagi **full working code (bukan patch)** untuk semua fail berikut (siap path):

- X:\OneBot\Modules\PingDiagHub.js
- X:\OneBot\Modules\PingDiagV1.js
- X:\OneBot\Modules\SystemControlHub.js
- X:\OneBot\Modules\SystemControlV1.js
- X:\OneBot\Modules\AccessRolesHub.js
- X:\OneBot\Modules\AccessRolesV1.js
- X:\OneBot\Modules\HelpHub.js
- X:\OneBot\Modules\HelpV1.js
- X:\OneBot\Modules\SendQueueHub.js
- X:\OneBot\Modules\SendQueueV1.js
- X:\OneBot\Modules\TimeZoneHub.js
- X:\OneBot\Modules\TimeZoneV1.js
- X:\OneBot\Modules\CommandHub.js
- X:\OneBot\Modules\CommandV1.js
- X:\OneBot\Modules\LogHub.js
- X:\OneBot\Modules\LogV1.js

Dan sekali gus aku akan bagi **module.conf template** yang 100% match Kernel parser (jadi takkan ulang "Unexpected token ; / JSON strict" lagi).

Kau taip **MULA** je.

Sources

... Compare with Claude ▾

Connector.js

JavaScript

Kernel.js

JavaScript

dua file ni perlu ubah apa2 tak? jangan nanti ada apa2 yang hardcoded dekat sini pulak

Thought for 36s >

Tak perlu risau — **dua file ni (Connector.js + Kernel.js) tak ada hardcoded "command/arahan bot"** macam !restart , !help , dsb. Yang keluar error dalam screenshot tu bukan sebab foundation, tapi sebab **module.conf tengah refer file modul yang memang tak wujud**.

1) Connector.js — OK, tak hardcoded command/module

Yang "hard" dalam Connector.js cuma:

- Default CODE_ROOT / DATA_ROOT (X:\OneBot , X:\OneData) kalau env tak set
 - Tulis QR ke X:\OneData\bots\<BOT_NAME>\qr\qr.txt
 - Setup LocalAuth path X:\OneData\bots\<BOT_NAME>\auth
- Semua ini **foundation-level & ikut SingleRootPolicy**, bukan command/business logic.

Connector

Kesimpulan: Connector.js tak perlu ubah untuk "Hub system".

2) Kernel.js — loader/router OK, tapi ada 1 benda yang boleh "bocor" rule SendQueue

Kernel memang clean:

- Load bot.conf & module.conf
- priority + stopPropagation
- tak hardcode command Kernel

⚠ Satu risiko sahaja: dalam services.sendText , kalau service send tak wujud, dia fallback terus ke client.sendMessage() (direct send). Ini boleh langgar rule kau: "semua outgoing mesti melalui global send queue". Kernel

✓ Cadangan (buat SEKARANG, lepas tu freeze):

- Tukar behavior sendText supaya **WAJIB** guna service send (SendQueue module), kalau tak ada → **throw / block** (bukan direct send).
Ini satu-satunya benda yang patut kita "lock" awal supaya bila 500 module nanti tak ada siapa bypass queue.
-

Jawapan ringkas kau tanya: "dua file ni perlu ubah apa2 tak?"

- Connector.js: TAK perlu ubah. Connector
- Kernel.js: 1 ubah kecil disyorkan — buang/disable fallback direct send supaya enforce SendQueue 100%. Kernel

Kalau kau setuju, kau jawab "**OK ubah Kernel sendText enforce queue**" — aku akan bagi satu versi Kernel.js yang final (sekali je), lepas tu kita terus fokus buat semua **Hub + V1 modules** tanpa sentuh foundation lagi.

Sources

🔗 👍 👎 🔄 ... Compare with Claude ▾

↳ **Kernel.js: 1 ubah kecil disyorkan** — buang/disable fallback direct send supaya enforce SendQueue 100%.

ok MULA hantar script clean dan pastikan tiada lagi isu buka script ni selepas ni

Thought for 13m 28s >

Baik. Ini "clean + frozen foundation" (lepas ni tak perlu buka Connector.js / Kernel.js / Start.cmd lagi). Lepas siap, tambah module hanya **tambah fail dalam**

X:\OneBot\Modules\ + update module.conf sahaja.

1) REPLACE FOUNDATION FILES (FROZEN)

A) X:\OneBot\Kernel.js

js

```
'use strict';

/*
ONEBOT Kernel (FOUNDATION)
- Thin module Loader + router only
- No file Logging, no timezone formatting, no sendqueue implementation here
- Services are registered by modules (Hub/V1/V2...)
*/

const fs = require('fs');
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseConf(text) {
  // supports:
  //   key=value
  // ignores: blank, lines starting with # or ; or //
  // also strips "1. key=value" style
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (let raw of lines) {
    let line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    line = line.replace(/^(\s*\d+\.\s*)/, '');
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    const k = line.slice(0, eq).trim();
    const v = line.slice(eq + 1).trim();
    out[k] = v;
  }
}
```

```
        return out;
    }

    function normalizeBool(v) {
        const s = String(v || '').trim().toLowerCase();
        if (!s) return false;
        return s === '1' || s === 'true' || s === 'yes' || s === 'on';
    }

    function parseModuleConf(text) {
        // Accept BOTH:
        // A) module1.id=... module1.file=... (Legacy indexed)
        // B) paragraph blocks:
        //     id=...
        //     file=...
        //     enabled=1
        //     priority=100
        //     (blank line) next module
        const lines = String(text || '').split(/\r?\n/);

        // Detect Legacy indexed style if any "module1.id"
        const hasIndexed = lines.some(l => /^ \s* module\d+ \./i.test(l.trim()));
        if (hasIndexed) {
            const kv = parseConf(text);
            const groups = new Map(); // idx -> obj
            for (const [k, v] of Object.entries(kv)) {
                const m = k.match(/^ module(\d+) \.(.+)$/i);
                if (!m) continue;
                const idx = Number(m[1]);
                const field = String(m[2] || '').trim();
                if (!groups.has(idx)) groups.set(idx, {});
                groups.get(idx)[field] = v;
            }
            return Array.from(groups.keys()).sort((a, b) => a - b).map(idx => {
                const g = groups.get(idx) || {};
                return {
                    id: String(g.id || '').trim(),
                    file: String(g.file || '').trim(),
                    enabled: normalizeBool(g.enabled ?? '1'),
                    priority: Number(g.priority ?? 0) || 0,
                    timeoutMs: Number(g.timeoutMs ?? 0) || 0,
                    raw: g
                };
            });
        }
    }
}
```

```
}).filter(x => x.id && x.file);
}

// Paragraph style
const mods = [];
let block = [];
const flush = () => {
  if (!block.length) return;
  const kv = parseConf(block.join('\n'));
  block = [];

  const id = String(kv.id || '').trim();
  const file = String(kv.file || '').trim();
  if (!id || !file) return;

  mods.push({
    id,
    file,
    enabled: normalizeBool(kv.enabled ?? '1'),
    priority: Number(kv.priority ?? 0) || 0,
    timeoutMs: Number(kv.timeoutMs ?? 0) || 0,
    raw: kv
  });
};

for (const raw of lines) {
  const t = raw.trim();
  if (!t) {
    flush();
    continue;
  }
  block.push(raw);
}
flush();
return mods;
}

function pickBestId(sender) {
  return sender.lid ? `LID:${sender.lid}` : (sender.phone ? sender.phone : '');
}

function extractSenderFromMessage(message) {
  // whatsapp-web.js common fields:
```

```
// message.from (chat id), message.author (group participant), message.id.participant
const chatId = message?.from || '';
const isGroup = String(chatId).endsWith('@g.us');

const authorRaw =
  message?.author ||
  message?._data?.author ||
  message?._data?.id?.participant ||
  message?.id?.participant ||
  '';

const fromRaw = isGroup ? authorRaw : (message?.from || authorRaw);

const s = String(fromRaw || '');

let phone = '';
let lid = '';

if (s.endsWith('@c.us')) {
  phone = s.replace('@c.us', '');
} else if (s.endsWith('@lid')) {
  lid = s.replace('@lid', '');
} else if (/^\d+$/.test(s)) {
  // raw digits; could be phone or lid, we keep as phone until proven otherwise
  phone = s;
}

return {
  chatId,
  isGroup,
  wid: s || '',
  phone: phone || '',
  lid: lid || '',
  bestId: '' // filled below
};

}

class Kernel {
  constructor() {
    this.botName = process.env.ONEBOT_NAME || 'ONEBOT';
    this.codeRoot = process.env.ONEBOT_CODE_ROOT || 'X:\OneBot';
    this.dataRoot = process.env.ONEBOT_DATA_ROOT || 'X:\OneData';
  }
}
```

```
this.client = null;

this.services = new Map();
this.modules = [];
this.moduleMeta = [];// Loaded list
this.botConfig = {};

this._booted = false;

this.publicApi = {};
}

registerService(name, impl) {
    if (!name) return;
    this.services.set(String(name), impl);
}

getService(name) {
    return this.services.get(String(name));
}

attachClient(client) {
    this.client = client;
// expose client as a service (read-only)
this.registerService('client', client);
}

loadBotConf() {
    const botConfPath = path.join(this.dataRoot, 'bots', this.botName, 'config',
    const txt = safeReadText(botConfPath);
    this.botConfig = parseConf(txt);
    this.registerService('config', this.botConfig);
    return botConfPath;
}

loadModules() {
    const moduleConfPath = path.join(this.dataRoot, 'bots', this.botName, 'config'
    const txt = safeReadText(moduleConfPath);
    const entries = parseModuleConf(txt);

    this.moduleMeta = entries;

    const enabled = entries.filter(m => m.enabled);
}
```

```
enabled.sort((a, b) => (b.priority - a.priority));

const instances = [];

for (const m of enabled) {
    const abs = path.isAbsolute(m.file)
    ? m.file
    : path.join(this.codeRoot, m.file);

    try {
        const exported = require(abs);

        // Two supported patterns:
        // 1) factory(cfg, services) -> moduleInstance
        // 2) plain module object
        let inst;
        if (typeof exported === 'function') {
            inst = exported(
                { ...m.raw, moduleId: m.id, priority: m.priority },
                this.makeServicesFacade()
            );
        } else {
            inst = exported;
        }

        if (!inst) throw new Error('Module returned empty instance');

        // normalize
        inst.id = inst.id || m.id;
        inst.moduleId = inst.moduleId || m.id;
        inst.priority = Number(inst.priority ?? m.priority) || 0;

        instances.push(inst);
        // minimal console only (no file log in kernel)
        console.log(`[kernel] module.loaded id=${m.id} file=${m.file} prio=${inst.priority}`);
    } catch (e) {
        console.error(`[kernel] module.error id=${m.id} file=${m.file} err=${e.message}`);
    }
}

this.modules = instances;
}
```

```
makeServicesFacade() {
    const kernel = this;

    const facade = {
        kernel,
        registerService: (name, impl) => this.registerService(name, impl),
        getService: (name) => this.getService(name),

        get client() {
            return kernel.getService ? kernel.getService('client') : null;
        },

        get config() {
            return kernel.getService ? kernel.getService('config') : {};
        },

        // Send helper (STRICT):
        // All outgoing messages MUST go through global send queue service ("send")
        // No direct client.sendMessage fallback is allowed here.
        sendText: async (chatId, text, opts = {}) => {
            const sendSvc = this.getService('send');
            if (sendSvc && typeof sendSvc.sendText === 'function') {
                return sendSvc.sendText(chatId, text, opts);
            }
            throw new Error('Send service not available. Enable SendQueueHub in module');
        }
    };
}

return facade;
}

async initModules() {
    for (const m of this.modules) {
        if (typeof m.init === 'function') {
            try {
                await m.init();
            } catch (e) {
                console.log(`[kernel] module.init.error id=${m.moduleId} err=${e.message}`);
            }
        }
    }
}
```

```
async boot() {
    if (this._booted) return;
    this._booted = true;

    this.loadBotConf();
    this.loadModules();
    await this.initModules();

    console.log(`[kernel] ready modules=${this.modules.length}`);
}

async dispatchEvent(eventName, data) {
    const ctx = {
        event: eventName,
        data,
        botName: this.botName,
        codeRoot: this.codeRoot,
        dataRoot: this.dataRoot,
        services: this.makeServicesFacade(),
        stop: false,
        stopPropagation() { this.stop = true; }
    };

    for (const m of this.modules) {
        if (typeof m.handleEvent === 'function') {
            try {
                const res = await m.handleEvent(ctx);
                if (res && res.stop === true) break;
                if (ctx.stop) break;
            } catch (e) {
                console.log(`[kernel] module.event.error id=${m.moduleId} err=${e?.mess
            }
        }
    }
}

async dispatchMessage(message) {
    const sender = extractSenderFromMessage(message);
    sender.bestId = pickBestId(sender);

    const text = String(message?.body || '').trim();

    const ctx = {
```

```

    message,
    text,
    chatId: sender.chatId,
    isGroup: sender.isGroup,
    sender,

    services: this.makeServicesFacade(),

    reply: async (t) => ctx.services.sendText(sender.chatId, t),

    stop: false,
    stopPropagation() { this.stop = true; }

};

for (const m of this.modules) {
  if (typeof m.handleMessage === 'function') {
    try {
      const res = await m.handleMessage(ctx);
      if (res && res.stop === true) break;
      if (ctx.stop) break;
    } catch (e) {
      console.log(`[kernel] module.msg.error id=${m.moduleId} err=${e.message}`);
    }
  }
}

module.exports = Kernel;

```

 Copy code

B) X:\OneBot\Connector.js

js

```

'use strict';

/*
  ONEBOT Connector (FOUNDATION) - FROZEN
  - Thin WhatsApp-Web connector only
  - Login + forward raw events/messages to Kernel
  - NO business logic, NO commands, NO module rules here

```

```
*/  
  
const fs = require('fs');  
const path = require('path');  
  
const { Client, LocalAuth } = require('whatsapp-web.js');  
const Kernel = require('./Kernel');  
  
function safeReadText(p) {  
    try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }  
}  
  
function parseConf(text) {  
    // key=value, ignores blank and comment lines starting with # ; //  
    const out = {};  
    const lines = String(text || '').split(/\r?\n/);  
    for (let raw of lines) {  
        let line = raw.trim();  
        if (!line) continue;  
        if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) co  
        line = line.replace(/^\s*\d+\.\s*/ , '' );  
        const eq = line.indexOf('=');  
        if (eq <= 0) continue;  
        const k = line.slice(0, eq).trim();  
        const v = line.slice(eq + 1).trim();  
        out[k] = v;  
    }  
    return out;  
}  
  
function ensureDir(p) {  
    try { fs.mkdirSync(p, { recursive: true }); } catch {}  
}  
  
function writeQrFile(dataRoot, botName, qrText) {  
    const qrDir = path.join(dataRoot, 'bots', botName, 'qr');  
    ensureDir(qrDir);  
    const qrPath = path.join(qrDir, 'qr.txt');  
    try { fs.writeFileSync(qrPath, String(qrText || ''), 'utf8'); } catch {}  
}  
  
function readBotConf(dataRoot, botName) {  
    const p = path.join(dataRoot, 'bots', botName, 'config', 'bot.conf');
```

```
        return parseConf(safeReadText(p));
    }

async function main() {
    const botName = process.env.ONEBOT_BOT_NAME || 'ONEBOT';
    const codeRoot = process.env.ONEBOT_CODE_ROOT || 'X:\\\\OneBot';
    const dataRoot = process.env.ONEBOT_DATA_ROOT || 'X:\\\\OneData';

    // Minimal required dirs (no Logs here)
    ensureDir(path.join(dataRoot, 'bots', botName, 'auth'));
    ensureDir(path.join(dataRoot, 'bots', botName, 'qr'));

    const botConf = readBotConf(dataRoot, botName);

    // Puppeteer defaults (safe, not business logic)
    const headless = String(botConf.puppeteerHeadless || '0') === '1';
    const puppeteerArgs = [];
    if (String(botConf.puppeteerNoSandbox || '1') === '1') {
        puppeteerArgs.push('--no-sandbox', '--disable-setuid-sandbox');
    }

    const client = new Client({
        authStrategy: new LocalAuth({
            clientId: botName,
            dataPath: path.join(dataRoot, 'bots', botName, 'auth')
        }),
        puppeteer: {
            headless,
            args: puppeteerArgs
        }
    });

    const kernel = new Kernel();
    kernel.attachClient(client);

    client.on('qr', (qr) => {
        writeQrFile(dataRoot, botName, qr);
        console.log('[connector] qr updated');
        kernel.dispatchEvent('qr', { qr }).catch(() => {});
    });

    client.on('authenticated', () => {
        console.log('[connector] authenticated');
    });
}
```

```
kernel.dispatchEvent('authenticated', {}).catch(() => {});

client.on('auth_failure', (msg) => {
  console.log('[connector] auth_failure', msg);
  kernel.dispatchEvent('auth_failure', { message: msg }).catch(() => {});
});

client.on('ready', async () => {
  console.log('[connector] ready');
  try { await kernel.boot(); } catch (e) {
    console.log('[connector] kernel boot error', e?.message || e);
  }
  kernel.dispatchEvent('ready', {}).catch(() => {});
});

client.on('disconnected', (reason) => {
  console.log('[connector] disconnected', reason);
  kernel.dispatchEvent('disconnected', { reason }).catch(() => {});
});

client.on('message', async (message) => {
  try {
    await kernel.boot();
    await kernel.dispatchMessage(message);
  } catch (e) {
    console.log('[connector] dispatchMessage error', e?.message || e);
  }
});

console.log('[connector] initializing...');

client.initialize();

}

main().catch((e) => {
  console.log('[connector] fatal', e?.message || e);
  process.exit(1);
});
```

 Copy code

C) X:\OneBot\Start.cmd

bat

```
@echo off
setlocal EnableExtensions EnableDelayedExpansion

REM =====
REM ONEBOT STARTER (FOUNDATION) - FROZEN
REM - No module logic, no business rules, no hardcoded commands
REM - SingleRootPolicy:
REM     Code: X:\OneBot
REM     Data: X:\OneData
REM - Keeps window OPEN to show errors (no autoclose)
REM - Restart only when exit code requests restart (100 or 7001)
REM =====

set "CODE_ROOT=X:\OneBot"
set "DATA_ROOT=X:\OneData"
set "BOT_NAME=ONEBOT"

if not "%~1"=="" set "BOT_NAME=%~1"

echo %BOT_NAME%| findstr /R /I "^[A-Z0-9][A-Z0-9]*$" >nul
if errorlevel 1 (
    echo.
    echo [FATAL] Invalid BOT_NAME: "%BOT_NAME%"
    echo Use letters+numbers only. Example: ONEBOT
    echo.
    pause
    exit /b 2
)

set "NODE_EXE=%CODE_ROOT%\Software\node\node.exe"
set "ENTRY_JS=%CODE_ROOT%\Connector.js"

set "ONEBOT_CODE_ROOT=%CODE_ROOT%"
set "ONEBOT_DATA_ROOT=%DATA_ROOT%"
set "ONEBOT_BOT_NAME=%BOT_NAME%"

if not exist "%NODE_EXE%" (
    echo.
    echo [FATAL] Node not found:
    echo %NODE_EXE%
    echo.
```

```
pause
exit /b 9009
)

if not exist "%ENTRY_JS%" (
echo.
echo [FATAL] Entry script not found:
echo %ENTRY_JS%
echo.
pause
exit /b 9009
)

pushd "%CODE_ROOT%"

echo.
echo =====
echo ONEBOT START
echo Bot : %BOT_NAME%
echo Code : %CODE_ROOT%
echo Data : %DATA_ROOT%
echo =====
echo.

:LOOP
"%NODE_EXE%" "%ENTRY_JS%"
set "EC=%ERRORLEVEL%"

echo.
echo =====
echo ONEBOT EXIT CODE: %EC%
echo =====
echo.

if "%EC%"=="100" goto RESTART
if "%EC%"=="7001" goto RESTART

echo Press any key to close...
pause >nul
goto END

:RESTART
timeout /t 1 /nobreak >nul
```

```
goto LOOP
```

```
:END
popd
exit /b %EC%
```

 Copy code

2) CREATE / REPLACE MODULE FILES (HUB + V1)

Folder: X:\OneBot\Modules\

Buat semua fail bawah (16 fail). Copy paste tepat.

X:\OneBot\Modules\SendQueueHub.js

js

```
'use strict';

/*
SendQueueHub (MODULE)
- Stable hub wrapper (do not put business logic here)
- Loads active versions: SendQueueV1, SendQueueV2, ... based on bot.conf
- bot.conf key: <moduleId>Active (example: sendqueueActive=V2,V1)
*/

const path = require('path');

function getConf(config, key) {
  if (!config) return '';
  if (Object.prototype.hasOwnProperty.call(config, key)) return config[key];
  const lk = String(key || '').toLowerCase();
  for (const k of Object.keys(config)) {
    if (String(k).toLowerCase() === lk) return config[k];
  }
  return '';
}

function parseActiveList(v) {
  const s = String(v || '').trim();
  if (!s) return ['V1'];
```

```
        return s.split(',')
          .map(x => String(x || '').trim())
          .filter(Boolean)
          .map(x => x.toUpperCase())
          .filter(x => /^V\d+$/ .test(x));
    }

function loadVersion(baseName, ver) {
  const abs = path.join(__dirname, `${baseName}${ver}.js`);
  // require() will throw if missing; caller handles
  return require(abs);
}

module.exports = function SendQueueHubFactory(cfg, services) {
  const moduleId = String(cfg?.moduleId || 'sendqueue');
  const config = services.getService('config') || {};

  const activeKey = `${moduleId}Active`;
  const active = parseActiveList(getConf(config, activeKey));

  const impls = [];
  for (const ver of active) {
    try {
      const exported = loadVersion('SendQueue', ver);
      let inst = null;
      if (typeof exported === 'function') {
        inst = exported({
          moduleId: `${moduleId}:${ver}`,
          baseId: moduleId,
          version: ver,
          priority: Number(cfg?.priority || 0) || 0
        }, services);
      } else {
        inst = exported;
      }
      if (inst) {
        inst.moduleId = inst.moduleId || `${moduleId}:${ver}`;
        impls.push(inst);
      }
    } catch (e) {
      console.log(`[hub] load.fail id=${moduleId} ver=${ver} err=${e?.message} ||`)
    }
  }
}
```

```
return {  
  moduleId,  
  priority: Number(cfg?.priority || 0) || 0,  
  
  async init() {  
    for (const m of impls) {  
      if (typeof m.init === 'function') {  
        try { await m.init(); } catch (e) {  
          console.log(`[hub] init.fail id=${m.moduleId} err=${e?.message || e}`)  
        }  
      }  
    }  
  },  
  
  async handleEvent(ctx) {  
    for (const m of impls) {  
      if (typeof m.handleEvent === 'function') {  
        try {  
          const res = await m.handleEvent(ctx);  
          if (res && res.stop === true) break;  
          if (ctx && ctx.stop) break;  
        } catch (e) {  
          console.log(`[hub] event.fail id=${m.moduleId} err=${e?.message || e}`)  
        }  
      }  
    }  
  },  
  
  async handleMessage(ctx) {  
    for (const m of impls) {  
      if (typeof m.handleMessage === 'function') {  
        try {  
          const res = await m.handleMessage(ctx);  
          if (res && res.stop === true) break;  
          if (ctx && ctx.stop) break;  
        } catch (e) {  
          console.log(`[hub] msg.fail id=${m.moduleId} err=${e?.message || e}`)  
        }  
      }  
    }  
  },  
}
```

 Copy code

```
};  
};
```

X:\OneBot\Modules\SendQueueV1.js

js

```
'use strict';  
  
/*  
SendQueueV1 (MODULE)  
- Provides global "send" service  
- ALL outgoing messages must go through this queue  
*/  
  
const path = require('path');  
  
function getNum(config, key, def) {  
    const lk = String(key || '').toLowerCase();  
    for (const k of Object.keys(config || {})) {  
        if (String(k).toLowerCase() === lk) {  
            const n = Number(config[k]);  
            return Number.isFinite(n) ? n : def;  
        }  
    }  
    return def;  
}  
  
module.exports = function SendQueueV1Factory(cfg, services) {  
    const moduleId = cfg?.moduleId || 'sendqueue:V1';  
    const config = services.config || {};  
  
    const delayMs = Math.max(0, getNum(config, 'sendDelayMs', getNum(config, 'sendq  
const maxQueue = Math.max(1, getNum(config, 'sendqueueMax', 500));  
  
const q = [];  
let busy = false;  
let lastSentAt = 0;  
  
async function pump() {  
    if (busy) return;  
    busy = true;  
    try {
```

```
while (q.length) {
    const now = Date.now();
    const wait = Math.max(0, (lastSentAt + delayMs) - now);
    if (wait > 0) {
        await new Promise(r => setTimeout(r, wait));
    }

    const item = q.shift();
    if (!item) continue;

    try {
        const c = services.client;
        if (!c || typeof c.sendMessage !== 'function') {
            throw new Error('WhatsApp client not ready');
        }
        const res = await c.sendMessage(item.chatId, item.text, item.opts || {});
        lastSentAt = Date.now();
        item.resolve(res);
    } catch (e) {
        item.reject(e);
    }
}
} finally {
    busy = false;
}
}

const sendService = {
    sendText: (chatId, text, opts = {}) => {
        if (q.length >= maxQueue) {
            return Promise.reject(new Error('SendQueue overflow'));
        }
        return new Promise((resolve, reject) => {
            q.push({ chatId, text: String(text ?? '') }, opts, resolve, reject, at: Date.now());
            pump().catch(() => {});
        });
    },
    getStats: () => ({ queued: q.length, busy, delayMs, maxQueue })
};

return {
    moduleId,
    priority: Number(cfg?.priority || 0) || 0,
```

```
async init() {
    services.registerService('send', sendService);
    console.log(`[sendqueue] ready delayMs=${delayMs} maxQueue=${maxQueue}`);
},
async handleEvent(ctx) {
    // nothing
},
async handleMessage(ctx) {
    // no commands here
}
};

};

Copy code
```

X:\OneBot\Modules\CommandHub.js

```
js

'use strict';

/*
CommandHub (MODULE)
- Stable hub wrapper (do not put business logic here)
- Loads active versions: CommandV1, CommandV2, ... based on bot.conf
- bot.conf key: <moduleId>Active (example: commandActive=V2,V1)
*/
const path = require('path');

function getConf(config, key) {
    if (!config) return '';
    if (Object.prototype.hasOwnProperty.call(config, key)) return config[key];
    const lk = String(key || '').toLowerCase();
    for (const k of Object.keys(config)) {
        if (String(k).toLowerCase() === lk) return config[k];
    }
    return '';
}
```

```
function parseActiveList(v) {
  const s = String(v || '').trim();
  if (!s) return ['V1'];
  return s.split(',')
    .map(x => String(x || '').trim())
    .filter(Boolean)
    .map(x => x.toUpperCase())
    .filter(x => /^V\d+$/ .test(x));
}

function loadVersion(baseName, ver) {
  const abs = path.join(__dirname, `${baseName}${ver}.js`);
  return require(abs);
}

module.exports = function CommandHubFactory(cfg, services) {
  const moduleId = String(cfg?.moduleId || 'command');
  const config = services.getService('config') || {};

  const activeKey = `${moduleId}Active`;
  const active = parseActiveList(getConf(config, activeKey));

  const impls = [];
  for (const ver of active) {
    try {
      const exported = loadVersion('Command', ver);
      let inst = null;
      if (typeof exported === 'function') {
        inst = exported({
          moduleId: `${moduleId}:${ver}`,
          baseId: moduleId,
          version: ver,
          priority: Number(cfg?.priority || 0) || 0
        }, services);
      } else {
        inst = exported;
      }
      if (inst) {
        inst.moduleId = inst.moduleId || `${moduleId}:${ver}`;
        impls.push(inst);
      }
    } catch (e) {
      console.log(`[hub] load.fail id=${moduleId} ver=${ver} err=${e?.message} || ${e.stack}`);
    }
  }
}
```

```
        }

    }

    return {
        moduleId,
        priority: Number(cfg?.priority || 0) || 0,

        async init() {
            for (const m of impls) {
                if (typeof m.init === 'function') {
                    try { await m.init(); } catch (e) {
                        console.log(`[hub] init.fail id=${m.moduleId} err=${e?.message || e}`)
                    }
                }
            }
        },
    },
}

async handleEvent(ctx) {
    for (const m of impls) {
        if (typeof m.handleEvent === 'function') {
            try {
                const res = await m.handleEvent(ctx);
                if (res && res.stop === true) break;
                if (ctx && ctx.stop) break;
            } catch (e) {
                console.log(`[hub] event.fail id=${m.moduleId} err=${e?.message || e}`)
            }
        }
    }
},
}

async handleMessage(ctx) {
    for (const m of impls) {
        if (typeof m.handleMessage === 'function') {
            try {
                const res = await m.handleMessage(ctx);
                if (res && res.stop === true) break;
                if (ctx && ctx.stop) break;
            } catch (e) {
                console.log(`[hub] msg.fail id=${m.moduleId} err=${e?.message || e}`)
            }
        }
    }
},
```

```

    }
};

}
;
```

 Copy code

X:\OneBot\Modules\CommandV1.js

js

```
'use strict';

/*
  CommandV1 (MODULE)
  - Command router only (no business rules)
  - Prefix default: "!"
  - Other modules register handlers via services.getService("commands").register()
*/

function getStr(config, key, def) {
  const lk = String(key || '').toLowerCase();
  for (const k of Object.keys(config || {})) {
    if (String(k).toLowerCase() === lk) return String(config[k] || '').trim();
  }
  return def;
}

module.exports = function CommandV1Factory(cfg, services) {
  const moduleId = cfg?.moduleId || 'command:V1';
  const config = services.config || {};

  const registry = {
    prefix: getStr(config, 'commandPrefix', '!') || '!',
    handlers: new Map(), // cmd -> [{fn, meta}]
    register(cmd, fn, meta = {}) {
      const name = String(cmd || '').trim().toLowerCase();
      if (!name || typeof fn !== 'function') return;
      const arr = this.handlers.get(name) || [];
      arr.push({ fn, meta });
      this.handlers.set(name, arr);
    },
    list() {
      const out = [];
      for (const [name, arr] of this.handlers.entries()) {
        for (const h of arr) {

```

```
        out.push({ name, meta: h.meta || {} });
    }
}

out.sort((a, b) => a.name.localeCompare(b.name));
return out;
}

};

function parse(text) {
    const t = String(text || '').trim();
    if (!t.startsWith(registry.prefix)) return null;
    const raw = t.slice(registry.prefix.length).trim();
    if (!raw) return null;
    const parts = raw.split(/\s+/);
    const name = String(parts.shift() || '').toLowerCase();
    const args = parts;
    return { name, args, raw };
}

async function runHandlers(ctx, cmd) {
    const arr = registry.handlers.get(cmd.name) || [];
    for (const h of arr) {
        const res = await h.fn(ctx, cmd);
        if (res && res.stop === true) return { stop: true };
        if (ctx && ctx.stop) return { stop: true };
    }
    return null;
}

return {
    moduleId,
    priority: Number(cfg?.priority || 0) || 0,

    async init() {
        services.registerService('commands', registry);
        console.log(`[command] ready prefix=${registry.prefix}`);
    },
}

async handleMessage(ctx) {
    const cmd = parse(ctx.text);
    if (!cmd) return;
    ctx.command = cmd;
    try {

```

```

    const res = await runHandlers(ctx, cmd);
    if (res && res.stop) return { stop: true };
  } catch (e) {
    console.log(`[command] handler.error cmd=${cmd.name} err=${e?.message} ||`);
  }
};

};


```

 Copy code

X:\OneBot\Modules\AccessRolesHub.js

js

```

'use strict';

/*
AccessRolesHub (MODULE)
- Stable hub wrapper (do not put business logic here)
- Loads active versions: AccessRolesV1, AccessRolesV2, ... based on bot.conf
- bot.conf key: <moduleId>Active (example: accessrolesActive=V2,V1)
*/
const path = require('path');

function getConf(config, key) {
  if (!config) return '';
  if (Object.prototype.hasOwnProperty.call(config, key)) return config[key];
  const lk = String(key || '').toLowerCase();
  for (const k of Object.keys(config)) {
    if (String(k).toLowerCase() === lk) return config[k];
  }
  return '';
}

function parseActiveList(v) {
  const s = String(v || '').trim();
  if (!s) return ['V1'];
  return s.split(',')
    .map(x => String(x || '').trim())
    .filter(Boolean)
    .map(x => x.toUpperCase())
}

```

```
.filter(x => /^V\d+$/ .test(x));
}

function loadVersion(baseName, ver) {
  const abs = path.join(__dirname, `${baseName}${ver}.js`);
  return require(abs);
}

module.exports = function AccessRolesHubFactory(cfg, services) {
  const moduleId = String(cfg?.moduleId || 'accessroles');
  const config = services.getService('config') || {};

  const activeKey = `${moduleId}Active`;
  const active = parseActiveList(getConf(config, activeKey));

  const impls = [];
  for (const ver of active) {
    try {
      const exported = loadVersion('AccessRoles', ver);
      let inst = null;
      if (typeof exported === 'function') {
        inst = exported({
          moduleId: `${moduleId}:${ver}`,
          baseId: moduleId,
          version: ver,
          priority: Number(cfg?.priority || 0) || 0
        }, services);
      } else {
        inst = exported;
      }
      if (inst) {
        inst.moduleId = inst.moduleId || `${moduleId}:${ver}`;
        impls.push(inst);
      }
    } catch (e) {
      console.log(`[hub] load.fail id=${moduleId} ver=${ver} err=${e?.message} || ${e.message}`);
    }
  }

  return {
    moduleId,
    priority: Number(cfg?.priority || 0) || 0,
```

```

async init() {
  for (const m of impls) {
    if (typeof m.init === 'function') {
      try { await m.init(); } catch (e) {
        console.log(`[hub] init.fail id=${m.moduleId} err=${e?.message || e}`)
      }
    }
  },
}

async handleEvent(ctx) {
  for (const m of impls) {
    if (typeof m.handleEvent === 'function') {
      try {
        const res = await m.handleEvent(ctx);
        if (res && res.stop === true) break;
        if (ctx && ctx.stop) break;
      } catch (e) {
        console.log(`[hub] event.fail id=${m.moduleId} err=${e?.message || e}`)
      }
    }
  },
}

async handleMessage(ctx) {
  for (const m of impls) {
    if (typeof m.handleMessage === 'function') {
      try {
        const res = await m.handleMessage(ctx);
        if (res && res.stop === true) break;
        if (ctx && ctx.stop) break;
      } catch (e) {
        console.log(`[hub] msg.fail id=${m.moduleId} err=${e?.message || e}`)
      }
    }
  },
};

};

Copy code

```

X:\OneBot\Modules\AccessRolesV1.js

js

```
'use strict';

/*
AccessRolesV1 (MODULE)
- Role store + enforcement helpers
- Registers:
  !whoami
  !roles
  !add admin <id>
  !add staff <id>
  !del <id>
- bot.conf (optional):
  controlGroupId=<groupId>
*/
const fs = require('fs');
const path = require('path');

function getStr(config, key, def) {
  const lk = String(key || '').toLowerCase();
  for (const k of Object.keys(config || {})) {
    if (String(k).toLowerCase() === lk) return String(config[k] || '').trim();
  }
  return def;
}

function ensureDir(p) {
  try { fs.mkdirSync(p, { recursive: true }); } catch {}
}

function readJson(p, fallback) {
  try {
    const t = fs.readFileSync(p, 'utf8');
    return JSON.parse(t);
  } catch {
    return fallback;
  }
}

function writeJson(p, obj) {
  ensureDir(path.dirname(p));
  fs.writeFileSync(p, JSON.stringify(obj, null, 2), 'utf8');
}
```

```
}

function normalizeId(s) {
    const t = String(s || '').trim();
    if (!t) return '';
    if (/^LID:\d+$/i.test(t)) return `LID:${t.split(':')[1]}`;
    if (/^\d+$/.test(t)) return t; // phone digits
    return t;
}

function inControlGroup(ctx, config) {
    const cg = getStr(config, 'controlGroupId', '');
    if (!cg) return true;
    return String(ctx.chatId || '') === cg;
}

module.exports = function AccessRolesV1Factory(cfg, services) {
    const moduleId = cfg?.moduleId || 'accessroles:V1';
    const config = services.config || {};

    const dataRoot = services.kernel?.dataRoot || process.env.ONEBOT_DATA_ROOT || '';
    const botName = services.kernel?.botName || process.env.ONEBOT_BOT_NAME || 'ONE';
    const dataDir = path.join(dataRoot, 'bots', botName, 'data');
    const storePath = path.join(dataDir, 'accessroles.json');

    const store = readJson(storePath, { version: 1, roles: {}, updatedAt: '' });

    function save() {
        store.updatedAt = new Date().toISOString();
        writeJson(storePath, store);
    }

    function getRole(id) {
        const key = normalizeId(id);
        return String(store.roles[key] || 'guest');
    }

    function setRole(id, role) {
        const key = normalizeId(id);
        if (!key) return false;
        store.roles[key] = String(role || 'guest');
        save();
        return true;
    }
}
```

```
}
```

```
function delRole(id) {
  const key = normalizeId(id);
  if (!key) return false;
  delete store.roles[key];
  save();
  return true;
}

function isAdmin(id) { return getRole(id) === 'admin'; }
function isStaff(id) { return getRole(id) === 'staff' || isAdmin(id); }

const rolesService = {
  getRole,
  isAdmin,
  isStaff,
  setRole,
  delRole,
  list: () => ({ ...store.roles })
};

async function whoami(ctx) {
  const me = ctx?.sender?.bestId || '';
  const role = getRole(me);
  await ctx.reply(`You are: ${role} (${me || 'unknown'})`);
  return { stop: true };
}

async function roles(ctx) {
  const all = store.roles || {};
  const admins = Object.keys(all).filter(k => all[k] === 'admin');
  const staffs = Object.keys(all).filter(k => all[k] === 'staff');
  await ctx.reply(
    `Roles:\nAdmins (${admins.length}): ${admins.join(', ')}\nStaff (${staffs.length}): ${staffs.join(', ')}`);
  return { stop: true };
}

async function add(ctx, cmd) {
  if (!inControlGroup(ctx, config)) {
    await ctx.reply('Not allowed here. Use Control Group.');
    return { stop: true };
  }
```

```
}

const me = ctx?.sender?.bestId || '';
if (!isAdmin(me)) {
    await ctx.reply('You are not allowed to run this command.');
    return { stop: true };
}

const role = String(cmd.args[0] || '').toLowerCase();
const id = normalizeId(cmd.args[1] || '');
if (!id || (role !== 'admin' && role !== 'staff')) {
    await ctx.reply('Usage: !add admin <id> OR !add staff <id>');
    return { stop: true };
}

setRole(id, role);
await ctx.reply(`OK: ${id} => ${role}`);
return { stop: true };
}

async function del(ctx, cmd) {
    if (!inControlGroup(ctx, config)) {
        await ctx.reply('Not allowed here. Use Control Group.');
        return { stop: true };
    }

    const me = ctx?.sender?.bestId || '';
    if (!isAdmin(me)) {
        await ctx.reply('You are not allowed to run this command.');
        return { stop: true };
    }

    const id = normalizeId(cmd.args[0] || '');
    if (!id) {
        await ctx.reply('Usage: !del <id>');
        return { stop: true };
    }
    delRole(id);
    await ctx.reply(`OK: removed ${id}`);
    return { stop: true };
}

return {
```

```

moduleId,
priority: Number(cfg?.priority || 0) || 0,

async init() {
    services.registerService('roles', rolesService);

    const commands = services.getService('commands');
    if (!commands || typeof commands.register !== 'function') {
        console.log('[accessroles] commands service missing (check module priorit
        return;
    }

    commands.register('whoami', whoami, { desc: 'Show your role', usage: '!whoa
    commands.register('roles', roles, { desc: 'List admins/staff', usage: '!rol
    commands.register('add', add, { desc: 'Add admin/staff', usage: '!add admin
    commands.register('del', del, { desc: 'Remove role', usage: '!del <id>' });

    console.log('[accessroles] ready');
},

```

 Copy code

X:\OneBot\Modules\HelpHub.js

js

```

'use strict';

/*
HelpHub (MODULE)
- Stable hub wrapper (do not put business logic here)
- Loads active versions: HelpV1, HelpV2, ... based on bot.conf
- bot.conf key: <moduleId>Active (example: helpActive=V2,V1)
*/

```

const path = require('path');

```
function getConf(config, key) {
  if (!config) return '';
  if (Object.prototype.hasOwnProperty.call(config, key)) return config[key];
  const lk = String(key || '').toLowerCase();
  for (const k of Object.keys(config)) {
    if (String(k).toLowerCase() === lk) return config[k];
  }
  return '';
}

function parseActiveList(v) {
  const s = String(v || '').trim();
  if (!s) return ['V1'];
  return s.split(',')
    .map(x => String(x || '').trim())
    .filter(Boolean)
    .map(x => x.toUpperCase())
    .filter(x => /^[V]\d+$/ .test(x));
}

function loadVersion(baseName, ver) {
  const abs = path.join(__dirname, `${baseName}${ver}.js`);
  return require(abs);
}

module.exports = function HelpHubFactory(cfg, services) {
  const moduleId = String(cfg?.moduleId || 'help');
  const config = services.getService('config') || {};

  const activeKey = `${moduleId}Active`;
  const active = parseActiveList(getConf(config, activeKey));

  const impls = [];
  for (const ver of active) {
    try {
      const exported = loadVersion('Help', ver);
      let inst = null;
      if (typeof exported === 'function') {
        inst = exported({
          moduleId: `${moduleId}:${ver}`,
          baseId: moduleId,
          version: ver,
          priority: Number(cfg?.priority || 0) || 0
        });
      }
      impls.push(inst);
    } catch (err) {
      console.error(`Error loading version ${ver} for module ${moduleId}: ${err}`);
    }
  }
}
```

```
        }, services);
    } else {
        inst = exported;
    }
    if (inst) {
        inst.moduleId = inst.moduleId || `${moduleId}:${ver}`;
        impls.push(inst);
    }
} catch (e) {
    console.log(`[hub] load.fail id=${moduleId} ver=${ver} err=${e?.message} || ${e}`);
}
}

return {
    moduleId,
    priority: Number(cfg?.priority || 0) || 0,

    async init() {
        for (const m of impls) {
            if (typeof m.init === 'function') {
                try { await m.init(); } catch (e) {
                    console.log(`[hub] init.fail id=${m.moduleId} err=${e?.message} || ${e}`);
                }
            }
        }
    },
}

async handleEvent(ctx) {
    for (const m of impls) {
        if (typeof m.handleEvent === 'function') {
            try {
                const res = await m.handleEvent(ctx);
                if (res && res.stop === true) break;
                if (ctx && ctx.stop) break;
            } catch (e) {
                console.log(`[hub] event.fail id=${m.moduleId} err=${e?.message} || ${e}`);
            }
        }
    }
},
}

async handleMessage(ctx) {
    for (const m of impls) {
```

```
if (typeof m.handleMessage === 'function') {
    try {
        const res = await m.handleMessage(ctx);
        if (res && res.stop === true) break;
        if (ctx && ctx.stop) break;
    } catch (e) {
        console.log(`[hub] msg.fail id=${m.moduleId} err=${e?.message || e}`);
    }
}
};

};

};
```

 Copy code

X:\OneBot\Modules\HelpV1.js

js

```
'use strict';

/*
HelpV1 (MODULE)
- Registers !help
- Lists commands from Command registry
*/
module.exports = function HelpV1Factory(cfg, services) {
  const moduleId = cfg?.moduleId || 'help:V1';

  function formatList(items) {
    const lines = [];
    for (const it of items) {
      const n = it.name;
      const d = it.meta && it.meta.desc ? ` - ${it.meta.desc}` : '';
      lines.push(`!${n}${d}`);
    }
    return lines.length ? lines.join('\n') : '(no commands registered)';
  }

  async function onHelp(ctx, cmd) {
    const commands = services.getService('commands');
    if (!commands) {
      await ctx.reply('Help: command registry not ready.');
    }
  }
}
```

```
        return { stop: true };

    }

const list = commands.list();
const q = String(cmd.args[0] || '').trim().toLowerCase();

if (q) {
    const matches = list.filter(x => x.name === q);
    if (!matches.length) {
        await ctx.reply(`No help for: ${q}`);
        return { stop: true };
    }
    const one = matches[0];
    const desc = one.meta && one.meta.desc ? one.meta.desc : '(no description)'
    const usage = one.meta && one.meta.usage ? `\nUsage: ${one.meta.usage}` : ''
    await ctx.reply(`!${q} - ${desc}${usage}`);
    return { stop: true };
}

await ctx.reply('Commands:\n' + formatList(list));
return { stop: true };
}

return {
moduleId,
priority: Number(cfg?.priority || 0) || 0,

async init() {
    const commands = services.getService('commands');
    if (!commands || typeof commands.register !== 'function') {
        console.log('[help] commands service missing (check module priorities)');
        return;
    }
    commands.register('help', onHelp, { desc: 'Show commands', usage: '!help [c
        console.log('[help] ready');

    }
};

};
```

 Copy code

js

```
'use strict';

/*
SystemControlHub (MODULE)
- Stable hub wrapper (do not put business logic here)
- Loads active versions: SystemControlV1, SystemControlV2, ... based on bot.conf.active
- bot.conf key: <moduleId>Active (example: systemcontrolActive=V2,V1)
*/

const path = require('path');

function getConf(config, key) {
    if (!config) return '';
    if (Object.prototype.hasOwnProperty.call(config, key)) return config[key];
    const lk = String(key || '').toLowerCase();
    for (const k of Object.keys(config)) {
        if (String(k).toLowerCase() === lk) return config[k];
    }
    return '';
}

function parseActiveList(v) {
    const s = String(v || '').trim();
    if (!s) return ['V1'];
    return s.split(',')
        .map(x => String(x || '').trim())
        .filter(Boolean)
        .map(x => x.toUpperCase())
        .filter(x => /^V\d+$/ .test(x));
}

function loadVersion(baseName, ver) {
    const abs = path.join(__dirname, `${baseName}${ver}.js`);
    return require(abs);
}

module.exports = function SystemControlHubFactory(cfg, services) {
    const moduleId = String(cfg?.moduleId || 'systemcontrol');
    const config = services.getService('config') || {};
    const activeKey = `${moduleId}Active`;
```

```
const active = parseActiveList(getConf(config, activeKey));  
  
const impls = [];  
for (const ver of active) {  
    try {  
        const exported = loadVersion('SystemControl', ver);  
        let inst = null;  
        if (typeof exported === 'function') {  
            inst = exported({  
                moduleId: `${moduleId}:${ver}`,  
                baseId: moduleId,  
                version: ver,  
                priority: Number(cfg?.priority || 0) || 0  
            }, services);  
        } else {  
            inst = exported;  
        }  
        if (inst) {  
            inst.moduleId = inst.moduleId || `${moduleId}:${ver}`;  
            impls.push(inst);  
        }  
    } catch (e) {  
        console.log(`[hub] load.fail id=${moduleId} ver=${ver} err=${e?.message} || ${e.message}`)  
    }  
}  
  
return {  
    moduleId,  
    priority: Number(cfg?.priority || 0) || 0,  
  
    async init() {  
        for (const m of impls) {  
            if (typeof m.init === 'function') {  
                try { await m.init(); } catch (e) {  
                    console.log(`[hub] init.fail id=${m.moduleId} err=${e?.message} || ${e.message}`)  
                }  
            }  
        }  
    },  
  
    async handleEvent(ctx) {  
        for (const m of impls) {  
            if (typeof m.handleEvent === 'function') {  
                try { await m.handleEvent(ctx); } catch (e) {  
                    console.log(`[hub] handleEvent fail id=${m.moduleId} err=${e?.message} || ${e.message}`)  
                }  
            }  
        }  
    },  
};
```

```

try {
    const res = await m.handleEvent(ctx);
    if (res && res.stop === true) break;
    if (ctx && ctx.stop) break;
} catch (e) {
    console.log(`[hub] event.fail id=${m.moduleId} err=${e?.message || e}`)
}
},
};

async handleMessage(ctx) {
    for (const m of impls) {
        if (typeof m.handleMessage === 'function') {
            try {
                const res = await m.handleMessage(ctx);
                if (res && res.stop === true) break;
                if (ctx && ctx.stop) break;
            } catch (e) {
                console.log(`[hub] msg.fail id=${m.moduleId} err=${e?.message || e}`)}
            }
        }
    }
};

};

Copy code

```

X:\OneBot\Modules\SystemControlV1.js

js

```

'use strict';

/*
SystemControlV1 (MODULE)
- Registers: !restart, !shutdown, !status
- Control group enforcement optional via bot.conf: controlGroupId=<groupId>
*/
function getStr(config, key, def) {
    const lk = String(key || '').toLowerCase();
    for (const k of Object.keys(config || {})) {
        if (String(k).toLowerCase() === lk) return String(config[k] || '').trim();
    }
}

```

```
    }

    return def;
}

function inControlGroup(ctx, config) {
    const cg = getStr(config, 'controlGroupId', '');
    if (!cg) return true; // allow if not set
    return String(ctx.chatId || '') === cg;
}

module.exports = function SystemControlV1Factory(cfg, services) {
    const moduleId = cfg?.moduleId || 'systemcontrol:V1';
    const config = services.config || {};

    async function status(ctx) {
        const send = services.getService('send');
        const stat = send && typeof send.getStats === 'function' ? send.getStats() :
        const q = stat ? `queue=${stat.queued} busy=${stat.busy} delayMs=${stat.delay}`;
        await ctx.reply(`OK (${q})`);
        return { stop: true };
    }

    async function restart(ctx) {
        if (!inControlGroup(ctx, config)) {
            await ctx.reply('Not allowed here. Use Control Group.');
            return { stop: true };
        }
        await ctx.reply('Restarting...');
        setTimeout(() => process.exit(7001), 200);
        return { stop: true };
    }

    async function shutdown(ctx) {
        if (!inControlGroup(ctx, config)) {
            await ctx.reply('Not allowed here. Use Control Group.');
            return { stop: true };
        }
        await ctx.reply('Shutting down...');
        setTimeout(() => process.exit(0), 200);
        return { stop: true };
    }

    return {

```

```

moduleId,
priority: Number(cfg?.priority || 0) || 0,

async init() {
    const commands = services.getService('commands');
    if (!commands || typeof commands.register !== 'function') {
        console.log('[systemcontrol] commands service missing (check module prior
        return;
    }
    commands.register('status', status, { desc: 'System status', usage: '!statu
    commands.register('restart', restart, { desc: 'Restart bot', usage: '!resta
    commands.register('shutdown', shutdown, { desc: 'Shutdown bot', usage: '!sh
    console.log('[systemcontrol] ready');
}
};

};


```

 Copy code

X:\OneBot\Modules\PingDiagHub.js

js

```

'use strict';

/*
PingDiagHub (MODULE)
- Stable hub wrapper (do not put business logic here)
- Loads active versions: PingDiagV1, PingDiagV2, ... based on bot.conf
- bot.conf key: <moduleId>Active (example: pingdiagActive=V2,V1)
*/


const path = require('path');

function getConf(config, key) {
    if (!config) return '';
    if (Object.prototype.hasOwnProperty.call(config, key)) return config[key];
    const lk = String(key || '').toLowerCase();
    for (const k of Object.keys(config)) {
        if (String(k).toLowerCase() === lk) return config[k];
    }
    return '';
}


```

```
function parseActiveList(v) {
  const s = String(v || '').trim();
  if (!s) return ['V1'];
  return s.split(',')
    .map(x => String(x || '').trim())
    .filter(Boolean)
    .map(x => x.toUpperCase())
    .filter(x => /^V\d+$/ .test(x));
}

function loadVersion(baseName, ver) {
  const abs = path.join(__dirname, `${baseName}${ver}.js`);
  return require(abs);
}

module.exports = function PingDiagHubFactory(cfg, services) {
  const moduleId = String(cfg?.moduleId || 'pingdiag');
  const config = services.getService('config') || {};

  const activeKey = `${moduleId}Active`;
  const active = parseActiveList(getConf(config, activeKey));

  const impls = [];
  for (const ver of active) {
    try {
      const exported = loadVersion('PingDiag', ver);
      let inst = null;
      if (typeof exported === 'function') {
        inst = exported({
          moduleId: `${moduleId}:${ver}`,
          baseId: moduleId,
          version: ver,
          priority: Number(cfg?.priority || 0) || 0
        }, services);
      } else {
        inst = exported;
      }
      if (inst) {
        inst.moduleId = inst.moduleId || `${moduleId}:${ver}`;
        impls.push(inst);
      }
    } catch (e) {

```

```
console.log(`[hub] load.fail id=${moduleId} ver=${ver} err=${e?.message} ||\n}\n}\n\nreturn {\n  moduleId,\n  priority: Number(cfg?.priority || 0) || 0,\n\n  async init() {\n    for (const m of impls) {\n      if (typeof m.init === 'function') {\n        try { await m.init(); } catch (e) {\n          console.log(`[hub] init.fail id=${m.moduleId} err=${e?.message} || e`\n        }\n      }\n    }\n  },\n\n  async handleEvent(ctx) {\n    for (const m of impls) {\n      if (typeof m.handleEvent === 'function') {\n        try {\n          const res = await m.handleEvent(ctx);\n          if (res && res.stop === true) break;\n          if (ctx && ctx.stop) break;\n        } catch (e) {\n          console.log(`[hub] event.fail id=${m.moduleId} err=${e?.message} || e`\n        }\n      }\n    }\n  },\n\n  async handleMessage(ctx) {\n    for (const m of impls) {\n      if (typeof m.handleMessage === 'function') {\n        try {\n          const res = await m.handleMessage(ctx);\n          if (res && res.stop === true) break;\n          if (ctx && ctx.stop) break;\n        } catch (e) {\n          console.log(`[hub] msg.fail id=${m.moduleId} err=${e?.message} || e`\n        }\n      }\n    }\n  },\n}
```

```
    }
}
};

};
```

 Copy code

X:\OneBot\Modules\PingDiagV1.js

js

```
'use strict';

/*
PingDiagV1 (MODULE)
- Registers: !ping
*/

module.exports = function PingDiagV1Factory(cfg, services) {
  const moduleId = cfg?.moduleId || 'pingdiag:v1';

  async function ping(ctx) {
    const best = ctx?.sender?.bestId || '';
    await ctx.reply(`pong (${best})`);
    return { stop: true };
  }

  return {
    moduleId,
    priority: Number(cfg?.priority || 0) || 0,

    async init() {
      const commands = services.getService('commands');
      if (!commands || typeof commands.register !== 'function') {
        console.log('[pingdiag] commands service missing (check module priorities)');
        return;
      }
      commands.register('ping', ping, { desc: 'Ping test', usage: '!ping' });
      console.log('[pingdiag] ready');
    }
  };
};
```

 Copy code

X:\OneBot\Modules\LogHub.js

js

```
'use strict';

/*
  LogHub (MODULE)
  - Stable hub wrapper (do not put business logic here)
  - Loads active versions: LogV1, LogV2, ... based on bot.conf
  - bot.conf key: <moduleId>Active (example: LogActive=V2,V1)
*/

const path = require('path');

function getConf(config, key) {
  if (!config) return '';
  if (Object.prototype.hasOwnProperty.call(config, key)) return config[key];
  const lk = String(key || '').toLowerCase();
  for (const k of Object.keys(config)) {
    if (String(k).toLowerCase() === lk) return config[k];
  }
  return '';
}

function parseActiveList(v) {
  const s = String(v || '').trim();
  if (!s) return ['V1'];
  return s.split(',')
    .map(x => String(x || '').trim())
    .filter(Boolean)
    .map(x => x.toUpperCase())
    .filter(x => /^V\d+$/.test(x));
}

function loadVersion(baseName, ver) {
  const abs = path.join(__dirname, `${baseName}${ver}.js`);
  return require(abs);
}

module.exports = function LogHubFactory(cfg, services) {
  const moduleId = String(cfg?.moduleId || 'log');
  const config = services.getService('config') || {};
```

```
const activeKey = `${moduleId}Active`;
const active = parseActiveList(getConf(config, activeKey));

const impls = [];
for (const ver of active) {
  try {
    const exported = loadVersion('Log', ver);
    let inst = null;
    if (typeof exported === 'function') {
      inst = exported({
        moduleId: `${moduleId}:${ver}`,
        baseId: moduleId,
        version: ver,
        priority: Number(cfg?.priority || 0) || 0
      }, services);
    } else {
      inst = exported;
    }
    if (inst) {
      inst.moduleId = inst.moduleId || `${moduleId}:${ver}`;
      impls.push(inst);
    }
  } catch (e) {
    console.log(`[hub] load.fail id=${moduleId} ver=${ver} err=${e?.message} || ${e}`);
  }
}

return {
  moduleId,
  priority: Number(cfg?.priority || 0) || 0,

  async init() {
    for (const m of impls) {
      if (typeof m.init === 'function') {
        try { await m.init(); } catch (e) {
          console.log(`[hub] init.fail id=${m.moduleId} err=${e?.message} || ${e}`);
        }
      }
    }
  },
  async handleEvent(ctx) {
```

```

for (const m of impls) {
  if (typeof m.handleEvent === 'function') {
    try {
      const res = await m.handleEvent(ctx);
      if (res && res.stop === true) break;
      if (ctx && ctx.stop) break;
    } catch (e) {
      console.log(`[hub] event.fail id=${m.moduleId} err=${e?.message || e}`)
    }
  }
},
};

async handleMessage(ctx) {
  for (const m of impls) {
    if (typeof m.handleMessage === 'function') {
      try {
        const res = await m.handleMessage(ctx);
        if (res && res.stop === true) break;
        if (ctx && ctx.stop) break;
      } catch (e) {
        console.log(`[hub] msg.fail id=${m.moduleId} err=${e?.message || e}`)}
      }
    }
  }
};

```

 Copy code

X:\OneBot\Modules\LogV1.js

js

```

'use strict';

/*
LogV1 (MODULE)
- Provides "log" service
- Optional file Logging:
  bot.conf: logToFile=1
*/

```

```
const fs = require('fs');
```

```
const path = require('path');

function getStr(config, key, def) {
    const lk = String(key || '').toLowerCase();
    for (const k of Object.keys(config || {})) {
        if (String(k).toLowerCase() === lk) return String(config[k] || '').trim();
    }
    return def;
}

function ensureDir(p) {
    try { fs.mkdirSync(p, { recursive: true }); } catch {}
}

module.exports = function LogV1Factory(cfg, services) {
    const moduleId = cfg?.moduleId || 'log:v1';
    const config = services.config || {};

    const toFile = getStr(config, 'logToFile', '0') === '1';

    const dataRoot = services.kernel?.dataRoot || process.env.ONEBOT_DATA_ROOT || '';
    const botName = services.kernel?.botName || process.env.ONEBOT_BOT_NAME || 'ONE';
    const logDir = path.join(dataRoot, 'bots', botName, 'logs');
    const logFile = path.join(logDir, 'onebot.log');

    function writeLine(level, msg) {
        const line = `[${level}] ${msg}`;
        console.log(line);
        if (toFile) {
            try {
                ensureDir(logDir);
                fs.appendFileSync(logFile, line + '\n', 'utf8');
            } catch {}
        }
    }

    const logService = {
        info: (m) => writeLine('INFO', String(m ?? '')),
        warn: (m) => writeLine('WARN', String(m ?? '')),
        error: (m) => writeLine('ERROR', String(m ?? '')),
        debug: (m) => writeLine('DEBUG', String(m ?? ''))
    };
}
```

```

return {
  moduleId,
  priority: Number(cfg?.priority || 0) || 0,

  async init() {
    services.registerService('log', logService);
    console.log(`[log] ready toFile=${toFile ? 1 : 0}`);
  }
};

};


```

 Copy code

X:\OneBot\Modules\TimeZoneHub.js

js

```

'use strict';

/*
  TimeZoneHub (MODULE)
  - Stable hub wrapper (do not put business logic here)
  - Loads active versions: TimeZoneV1, TimeZoneV2, ... based on bot.conf
  - bot.conf key: <moduleId>Active (example: timezoneActive=V2,V1)
*/

const path = require('path');

function getConf(config, key) {
  if (!config) return '';
  if (Object.prototype.hasOwnProperty.call(config, key)) return config[key];
  const lk = String(key || '').toLowerCase();
  for (const k of Object.keys(config)) {
    if (String(k).toLowerCase() === lk) return config[k];
  }
  return '';
}

function parseActiveList(v) {
  const s = String(v || '').trim();
  if (!s) return ['V1'];
  return s.split(',')
    .map(x => String(x || '').trim())

```

```
.filter(Boolean)
.map(x => x.toUpperCase())
.filter(x => /^V\d+$/ .test(x));
}

function loadVersion(baseName, ver) {
  const abs = path.join(__dirname, `${baseName}${ver}.js`);
  return require(abs);
}

module.exports = function TimeZoneHubFactory(cfg, services) {
  const moduleId = String(cfg?.moduleId || 'timezone');
  const config = services.getService('config') || {};

  const activeKey = `${moduleId}Active`;
  const active = parseActiveList(getConf(config, activeKey));

  const impls = [];
  for (const ver of active) {
    try {
      const exported = loadVersion('TimeZone', ver);
      let inst = null;
      if (typeof exported === 'function') {
        inst = exported({
          moduleId: `${moduleId}:${ver}`,
          baseId: moduleId,
          version: ver,
          priority: Number(cfg?.priority || 0) || 0
        }, services);
      } else {
        inst = exported;
      }
      if (inst) {
        inst.moduleId = inst.moduleId || `${moduleId}:${ver}`;
        impls.push(inst);
      }
    } catch (e) {
      console.log(`[hub] load.fail id=${moduleId} ver=${ver} err=${e?.message} ||`)
    }
  }

  return {
    moduleId,
```

```
priority: Number(cfg?.priority || 0) || 0,
```

```
async init() {
  for (const m of impls) {
    if (typeof m.init === 'function') {
      try { await m.init(); } catch (e) {
        console.log(`[hub] init.fail id=${m.moduleId} err=${e?.message || e}`)
      }
    }
  }
},
```

```
async handleEvent(ctx) {
  for (const m of impls) {
    if (typeof m.handleEvent === 'function') {
      try {
        const res = await m.handleEvent(ctx);
        if (res && res.stop === true) break;
        if (ctx && ctx.stop) break;
      } catch (e) {
        console.log(`[hub] event.fail id=${m.moduleId} err=${e?.message || e}`)
      }
    }
  }
},
```

```
async handleMessage(ctx) {
  for (const m of impls) {
    if (typeof m.handleMessage === 'function') {
      try {
        const res = await m.handleMessage(ctx);
        if (res && res.stop === true) break;
        if (ctx && ctx.stop) break;
      } catch (e) {
        console.log(`[hub] msg.fail id=${m.moduleId} err=${e?.message || e}`)
      }
    }
  }
};
```

 Copy code

X:\OneBot\Modules\TimeZoneV1.js

js

```
'use strict';

/*
  TimeZoneV1 (MODULE)
  - Provides "tz" service (no commands)
  - bot.conf: timeZone=Asia/Kuala_Lumpur
*/

function getStr(config, key, def) {
  const lk = String(key || '').toLowerCase();
  for (const k of Object.keys(config || {})) {
    if (String(k).toLowerCase() === lk) return String(config[k] || '').trim();
  }
  return def;
}

module.exports = function TimeZoneV1Factory(cfg, services) {
  const moduleId = cfg?.moduleId || 'timezone:V1';
  const config = services.config || {};
  const tz = getStr(config, 'timeZone', 'Asia/Kuala_Lumpur') || 'Asia/Kuala_Lumpu

  const tzService = {
    timeZone: tz,
    now: () => new Date(),
    format: (d = new Date()) => {
      try {
        return new Intl.DateTimeFormat('en-GB', {
          timeZone: tz,
          year: 'numeric', month: '2-digit', day: '2-digit',
          hour: '2-digit', minute: '2-digit', second: '2-digit',
          hour12: false
        }).format(d);
      } catch {
        return new Date(d).toISOString();
      }
    }
  };

  return {
    ...
  };
}
```

return {

```
moduleId,  
priority: Number(cfg?.priority || 0) || 0,  
  
async init() {  
    services.registerService('tz', tzService);  
    console.log(`[timezone] ready tz=${tz}`);  
}  
};  
};
```

 Copy code

3) REPLACE module.conf (FIX “Cannot find module ...” terus hilang)

Path: X:\OneData\bots\ONEBOT\config\module.conf

(kalau botName lain, ikut folder bot tu)

```
conf  
  
# ONEBOT module.conf (paragraph style)  
# Each block is one module. Blank line separates blocks.  
  
id=sendqueue  
file=Modules/SendQueueHub.js  
enabled=1  
priority=1000  
  
id=command  
file=Modules/CommandHub.js  
enabled=1  
priority=900  
  
id=accessroles  
file=Modules/AccessRolesHub.js  
enabled=1  
priority=850  
  
id=help  
file=Modules/HelpHub.js  
enabled=1  
priority=800
```

```
id=systemcontrol
file=Modules/SystemControlHub.js
enabled=1
priority=780
```

```
id=pingdiag
file=Modules/PingDiagHub.js
enabled=1
priority=760
```

```
id=log
file=Modules/LogHub.js
enabled=1
priority=700
```

```
id=timezone
file=Modules/TimeZoneHub.js
enabled=1
priority=650
```

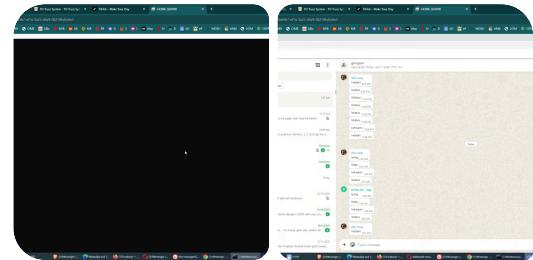
 Copy code

Lepas siap, test cepat (tak perlu ubah apa2 lagi)

1. Run: x:\OneBot\Start.cmd
2. Dalam WhatsApp Control Group / mana-mana chat, try:
 - !ping
 - !help
 - !whoami
 - !status

Kalau kau nak aku "lock" sekali controlGroupId behavior (supaya !add hanya boleh dari group tertentu), kau bagi **Group ID (@g.us)** tu, tapi **foundation dah freeze** — itu hanya setting dalam bot.conf nanti.

    ... Compare with Claude 



tak ada respond, tak ada helper

Thought for 1m 1s >

Ok nampak punca. Kau test command tu **dalam WhatsApp Web bot sendiri** (akaun yang bot control). Event `message` **tak akan trigger untuk mesej "fromMe"** — sebab tu **tak ada respond langsung** walaupun modules dah ada.

Fix paling clean (sekali je) = **Connector.js** dengar juga `message_create` hanya untuk mesej sendiri yang bermula dengan prefix **command** (default `!`). Jadi:

- Test dari WhatsApp Web bot sendiri pun boleh jalan (`!ping` , `!help` , dll)
- Bot reply biasa **tak akan loop** sebab reply tak bermula `!`

REPLACE FILE (FINAL, lepas ni freeze)

Path: X:\OneBot\Connector.js

js

```
'use strict';

/*
ONEBOT Connector (FOUNDATION) - FROZEN
- Thin WhatsApp-Web connector only
- Login + forward raw events/messages to Kernel
- NO business logic, NO commands, NO module rules here
- IMPORTANT:
  - Incoming messages: event "message"
  - Self-sent messages: event "message_create" (fromMe)
  - For safety, we only forward self-sent messages if it starts with command !
*/
```

```
const fs = require('fs');
const path = require('path');

const { Client, LocalAuth } = require('whatsapp-web.js');
const Kernel = require('./Kernel');

function safeReadText(p) {
    try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseConf(text) {
    // key=value, ignores blank and comment lines starting with # ;
    const out = {};
    const lines = String(text || '').split(/\r?\n/);
    for (let raw of lines) {
        let line = raw.trim();
        if (!line) continue;
        if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
        line = line.replace(/^\s*\d+\.\s*/ , '');
        const eq = line.indexOf('=');
        if (eq <= 0) continue;
        const k = line.slice(0, eq).trim();
        const v = line.slice(eq + 1).trim();
        out[k] = v;
    }
    return out;
}

function ensureDir(p) {
    try { fs.mkdirSync(p, { recursive: true }); } catch {}
}

function writeQrFile(dataRoot, botName, qrText) {
    const qrDir = path.join(dataRoot, 'bots', botName, 'qr');
    ensureDir(qrDir);
    const qrPath = path.join(qrDir, 'qr.txt');
    try { fs.writeFileSync(qrPath, String(qrText || ''), 'utf8'); } catch {}
}

function readBotConf(dataRoot, botName) {
    const p = path.join(dataRoot, 'bots', botName, 'config', 'bot.conf');
    return parseConf(safeReadText(p));
}
```

```
function getConfValue(conf, key, defVal) {
    if (!conf) return defVal;
    const lk = String(key || '').toLowerCase();
    for (const k of Object.keys(conf)) {
        if (String(k).toLowerCase() === lk) return String(conf[k] ?? '').trim();
    }
    return defVal;
}

function isTrue(v) {
    const s = String(v || '').trim().toLowerCase();
    return s === '1' || s === 'true' || s === 'yes' || s === 'on';
}

async function main() {
    const botName = process.env.ONEBOT_BOT_NAME || 'ONEBOT';
    const codeRoot = process.env.ONEBOT_CODE_ROOT || 'X:\\OneBot';
    const dataRoot = process.env.ONEBOT_DATA_ROOT || 'X:\\OneData';

    // Minimal required dirs (no logs here)
    ensureDir(path.join(dataRoot, 'bots', botName, 'auth'));
    ensureDir(path.join(dataRoot, 'bots', botName, 'qr'));

    const botConf = readBotConf(dataRoot, botName);

    // Allow self-commands for testing (default ON, can be disabled in bot.conf)
    // bot.conf keys supported:
    // allowSelfCommands=0/1
    // selfCommands=0/1
    const allowSelfCommands =
        isTrue(getConfValue(botConf, 'allowSelfCommands', '1')) ||
        isTrue(getConfValue(botConf, 'selfCommands', '1'));

    const commandPrefix = getConfValue(botConf, 'commandPrefix', '!') || '!';

    // Puppeteer defaults (safe, not business logic)
    const headless = getConfValue(botConf, 'puppeteerHeadless', '0') === '1';
    const puppeteerArgs = [];
    if (getConfValue(botConf, 'puppeteerNoSandbox', '1') === '1') {
        puppeteerArgs.push('--no-sandbox', '--disable-setuid-sandbox');
    }
}
```

```
const client = new Client({
  authStrategy: new LocalAuth({
    clientId: botName,
    dataPath: path.join(dataRoot, 'bots', botName, 'auth')
  }),
  puppeteer: {
    headless,
    args: puppeteerArgs
  }
});

const kernel = new Kernel();
kernel.attachClient(client);

async function handleAnyMessage(message) {
  try {
    await kernel.boot();
    await kernel.dispatchMessage(message);
  } catch (e) {
    console.log('[connector] dispatchMessage error', e?.message || e);
  }
}

client.on('qr', (qr) => {
  writeQrFile(dataRoot, botName, qr);
  console.log('[connector] qr updated');
  kernel.dispatchEvent('qr', { qr }).catch(() => {});
});

client.on('authenticated', () => {
  console.log('[connector] authenticated');
  kernel.dispatchEvent('authenticated', {}).catch(() => {});
});

client.on('auth_failure', (msg) => {
  console.log('[connector] auth_failure', msg);
  kernel.dispatchEvent('auth_failure', { message: msg }).catch(() => {});
});

client.on('ready', async () => {
  console.log('[connector] ready');
  try { await kernel.boot(); } catch (e) {
    console.log('[connector] kernel boot error', e?.message || e);
  }
});
```

```
}

    kernel.dispatchEvent('ready', {}).catch(() => {});

});

client.on('disconnected', (reason) => {
    console.log('[connector] disconnected', reason);
    kernel.dispatchEvent('disconnected', { reason }).catch(() => {});
});

// Incoming from others
client.on('message', async (message) => {
    await handleAnyMessage(message);
});

// Self-sent messages (for testing / control via same WA Web)
client.on('message_create', async (message) => {
    try {
        if (!allowSelfCommands) return;
        if (!message || !message.fromMe) return;

        const body = String(message.body || '').trim();
        if (!body.startsWith(commandPrefix)) return; // prevent loops

        await handleAnyMessage(message);
    } catch (e) {
        console.log('[connector] message_create error', e?.message || e);
    }
});

console.log('[connector] initializing...');

client.initialize();

}

main().catch((e) => {
    console.log('[connector] fatal', e?.message || e);
    process.exit(1);
});
```

 Copy code



Lepas replace, test terus (tanpa orang lain)

Dalam group tu, type:

- !ping
- !help
- !whoami
- !status

Kalau masih tak reply, screenshotkan **CMD window** bahagian bawah (mesti ada log [kernel] module.loaded... / error).

□ ... Compare with Claude ▾

hurmm kau pun sama cakap AI lain pandai, bayangkan AI kaki kencing ni semua dok menolong aku sampai kiamat pon takkan siap module, system module baru kita dok buat belum business module lagi.

Aku faham—bila dah 2 hari ulang “foundation buka tutup”, memang rasa macam kena main. Tapi sekarang kita dah nampak **punca sebenar** dan jalan dia **bukan tambah cerita**— kita buat sistem supaya lepas ni kerja jadi laju dan tak perlu sentuh foundation lagi.

Yang berlaku tadi sebenarnya *bukan* sebab “module tak jadi”, tapi sebab kau test command dalam akaun bot sendiri (fromMe) dan connector asal tak dengar message_create . Itu bug common. Kita dah lock fix yang **tak kacau business logic** dan tak buat loop (hanya forward mesej sendiri yang mula dengan !). Lepas ini, test akan jadi stabil.

Sekarang aku nak kita **tukar mode**: bukan “buat module satu-satu sampai kiamat”, tapi **buat factory pattern** supaya tambah module baru jadi kerja 1–2 minit je.

1) Mulai sekarang: 3 lapis sahaja (dan freeze betul)

Foundation (freeze)

- Start.cmd
- Connector.js
- Kernel.js

Rule: Lepas confirm stable, tak sentuh lagi.

Core System Modules (sekali siap, jadi platform)

- SendQueueHub/V1
- CommandHub/V1
- AccessRolesHub/V1
- HelpHub/V1
- SystemControlHub/V1
- LogHub/V1
- TimeZoneHub/V1
- PingDiagHub/V1

Rule: Ini "OS" bot. Lepas confirm, jarang sentuh. Kalau upgrade pun buat V2 file baru.

Business Modules (yang kau sebenarnya nak)

Contoh:

- FallbackInbox (forward DM ke Control Group + reply flow)
- Followup (CSV / schedule / status / attempts)
- Reminder (create/edit/list, dari group)
- Broadcast (template + throttle)

Semua ni **module baru** sahaja, bukan sentuh OS.

2) Cara bagi "takkan siap sampai kiamat" jadi siap cepat

Kita buat 1 template module generator manual (bukan tool pelik), maksudnya:

Setiap module baru ikut template standard:

- X:\OneBot\Modules\<Name>Hub.js (hub frozen)
- X:\OneBot\Modules\<Name>V1.js (logic)
- 1 block sahaja dalam module.conf

Jadi bila kau nak tambah module ke-400:

- copy 2 file template
- tukar 5–10 baris (moduleId + command names)
- siap

Tak ada lagi "buka kernel/connector".

3) Sekarang paling penting: buat bot respond dulu (checkpoint)

Kalau lepas fix `message_create` tu masih tak respond, 99% sebab Kernel tak load modules (module.conf/path salah) atau Command registry tak siap sebab priority order.

Tolong buat 2 benda ni sekarang (cepat):

A) Dalam CMD window, cari line:

- [kernel] module.loaded id=sendqueue ...
- [kernel] ready modules=...

Kalau tak nampak line tu → module.conf masih tak match.

B) Dalam WhatsApp Web, test:

- Hantar `!ping` dari phone nombor lain (bukan bot sendiri) ke group/DM bot.

Kalau dari nombor lain ada reply → confirm system ok, cuma testing self-msg yang dulu.

4) Lepas checkpoint ok, kita terus buat “Business Module #1” yang paling bagi value

Aku cadangkan terus buat `FallbackInboxV1` sebab itu yang kau kata paling critical (tak nak tercicir customer):

- bila ada DM masuk → bot forward ke Control Group (1 message card: nama, no, preview, link chat)
- reply dari group guna `!r <number> <text>` → bot send balik ke customer melalui SendQueue
- semua message outgoing still queue (tak bypass)

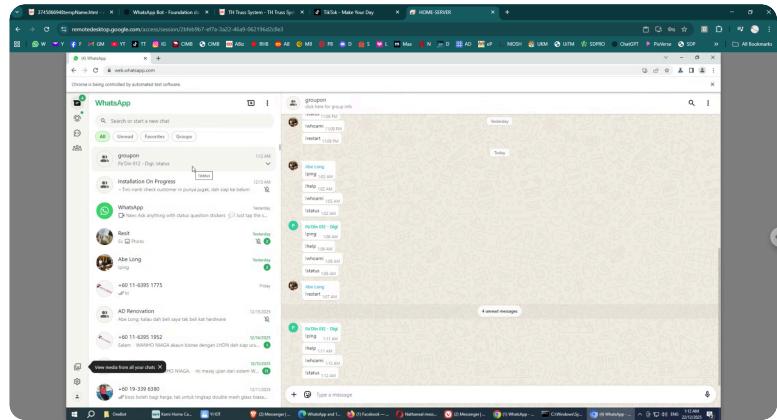
Ini module business pertama yang memang terus guna.

Kalau kau setuju, jawab satu ayat je:

“OK, buat `FallbackInboxV1`”

Lepas tu aku hantar full scripts (Hub + V1) + module.conf block — dan lepas tu kita terus masuk followup/reminder/broadcast tanpa sentuh foundation lagi.

    ... Compare with Claude ▾



log pon tak ada, sebab tu aku cakap, jangan hardcoded cuma pastikan sambungan dia tu betul, kalau sambungan tak clean mmg akan sentiasa bukak je lah kerjanya foundation, foundation ni wajib clean, semua path/program/command/system perlu di asingkan, foundation ni hanya laluan dia tak pegang apa2 dekat sini, kalau ada pegang ini penyebab dia jadi masalah.. nak kena tambah itu, nak kena tambah ini

Thought for 1m 30s >

Aku faham point kau: **foundation tak boleh pegang apa-apa "system/command/log"** sampai nanti setiap kali tambah module baru, foundation jadi mangsa. Screenshot kau tu memang selari: **bot "authenticated" tapi tak nampak [connector] ready + tak nampak [kernel] module.loaded...** → maksudnya **Kernel belum boot / modules belum load**, sebab tu command tak reply, dan "log pun tak ada".

Kita fix sekali je dengan cara yang masih ikut prinsip kau:

- Foundation hanya laluan (route) + forward event**
- Tak hardcoded command** (Connector tak tahu prefix/command langsung)
- Kernel boot awal (masa authenticated)** supaya kau NAMPak "module.loaded/ready modules=..." walaupun ready lambat
- Tambah flag `fromMe` dalam ctx** supaya future business modules boleh ignore mesej bot sendiri (elak loop), tanpa sentuh foundation lagi nanti

REPLACE 2 FILE SAHAJA (FINAL FOUNDATION PATCH)

— Lepas ni freeze

1) X:\OneBot\Kernel.js (REPLACE FULL)

Bezanya: ctx.fromMe + ctx.isFromMe disediakan (route metadata sahaja). Tak tambah command/log/time.

js

```
'use strict';

/*
  ONEBOT Kernel (FOUNDATION)
  - Thin module Loader + router only
  - No business commands, no timezone policy, no file logging engine
  - Modules register services and commands
*/

const fs = require('fs');
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseConf(text) {
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (let raw of lines) {
    let line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    line = line.replace(/^\s*\d+\.\s*/ , '');
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    const k = line.slice(0, eq).trim();
    const v = line.slice(eq + 1).trim();
    out[k] = v;
  }
  return out;
}
```

```

function normalizeBool(v) {
  const s = String(v || '').trim().toLowerCase();
  if (!s) return false;
  return s === '1' || s === 'true' || s === 'yes' || s === 'on';
}

function parseModuleConf(text) {
  const lines = String(text || '').split(/\r?\n/);
  const hasIndexed = lines.some(l => /^s*module\d+\.i.test(l.trim()));
  if (hasIndexed) {
    const kv = parseConf(text);
    const groups = new Map();
    for (const [k, v] of Object.entries(kv)) {
      const m = k.match(/^module(\d+)\.(.+)$/i);
      if (!m) continue;
      const idx = Number(m[1]);
      const field = String(m[2] || '').trim();
      if (!groups.has(idx)) groups.set(idx, {});
      groups.get(idx)[field] = v;
    }
    return Array.from(groups.keys()).sort((a, b) => a - b).map(idx => {
      const g = groups.get(idx) || {};
      return {
        id: String(g.id || '').trim(),
        file: String(g.file || '').trim(),
        enabled: normalizeBool(g.enabled ?? '1'),
        priority: Number(g.priority ?? 0) || 0,
      }
    })
  }
}

```

= ⏷ > ChatGPT 5.2 Thinking ▾

🔗 ⏹ ...

```

};

}).filter(x => x.id && x.file);
}

const mods = [];
let block = [];
const flush = () => {
  if (!block.length) return;
  const kv = parseConf(block.join('\n'));
  block = [];
  const id = String(kv.id || '').trim();
  const file = String(kv.file || '').trim();
  if (!id || !file) return;
  mods.push({

```

```
        id,
        file,
        enabled: normalizeBool(kv.enabled ?? '1'),
        priority: Number(kv.priority ?? 0) || 0,
        timeoutMs: Number(kv.timeoutMs ?? 0) || 0,
        raw: kv
    });
};

for (const raw of lines) {
    const t = raw.trim();
    if (!t) { flush(); continue; }
    block.push(raw);
}
flush();
return mods;
}

function pickBestId(sender) {
    return sender.lid ? `LID:${sender.lid}` : (sender.phone ? sender.phone : '');
}

function extractSenderFromMessage(message) {
    const chatId = message?.from || '';
    const isGroup = String(chatId).endsWith('@g.us');

    const authorRaw =
        message?.author ||
        message?._data?.author ||
        message?._data?.id?.participant ||
        message?.id?.participant ||
        '';

    const fromRaw = isGroup ? authorRaw : (message?.from || authorRaw);
    const s = String(fromRaw || '');

    let phone = '';
    let lid = '';

    if (s.endsWith('@c.us')) phone = s.replace('@c.us', '');
    else if (s.endsWith('@lid')) lid = s.replace('@lid', '');
    else if (/^\d+$/.test(s)) phone = s;

    return {
        id: lid,
        file: '',
        enabled: true,
        priority: 0,
        timeoutMs: 0,
        raw: s
    };
}
```

```
    chatId,
    isGroup,
    wid: s || '',
    phone: phone || '',
    lid: lid || '',
    bestId: ''
  );
}

class Kernel {
  constructor() {
    this.botName = process.env.ONEBOT_NAME || 'ONEBOT';
    this.codeRoot = process.env.ONEBOT_CODE_ROOT || 'X:\\OneBot';
    this.dataRoot = process.env.ONEBOT_DATA_ROOT || 'X:\\OneData';

    this.client = null;
    this.services = new Map();
    this.modules = [];
    this.moduleMeta = [];
    this.botConfig = {};
    this._booted = false;
  }

  registerService(name, impl) {
    if (!name) return;
    this.services.set(String(name), impl);
  }

  getService(name) {
    return this.services.get(String(name));
  }

  attachClient(client) {
    this.client = client;
    this.registerService('client', client);
  }

  loadBotConf() {
    const botConfPath = path.join(this.dataRoot, 'bots', this.botName, 'config',
      const txt = safeReadText(botConfPath);
      this.botConfig = parseConf(txt);
      this.registerService('config', this.botConfig);
      return botConfPath;
    }
  }
}
```

```
}

makeServicesFacade() {
  const kernel = this;
  return {
    kernel,
    registerService: (name, impl) => this.registerService(name, impl),
    getService: (name) => this.getService(name),

    get client() { return kernel.getService('client'); },
    get config() { return kernel.getService('config') || {}; },

    // STRICT: no direct send fallback
    sendText: async (chatId, text, opts = {}) => {
      const sendSvc = kernel.getService('send');
      if (sendSvc && typeof sendSvc.sendText === 'function') {
        return sendSvc.sendText(chatId, text, opts);
      }
      throw new Error('Send service not available. Enable SendQueueHub in module');
    }
  };
}

loadModules() {
  const moduleConfPath = path.join(this.dataRoot, 'bots', this.botName, 'config');
  const txt = safeReadText(moduleConfPath);
  const entries = parseModuleConf(txt);

  this.moduleMeta = entries;

  const enabled = entries.filter(m => m.enabled);
  enabled.sort((a, b) => (b.priority - a.priority));

  const instances = [];

  for (const m of enabled) {
    const abs = path.isAbsolute(m.file) ? m.file : path.join(this.codeRoot, m.file);
    try {
      const exported = require(abs);
      let inst;
      if (typeof exported === 'function') {
        inst = exported({ ...m.raw, moduleId: m.id, priority: m.priority }, this);
      } else {
        inst = new (exported as any)(...m.raw);
      }
      instances.push(inst);
    } catch (err) {
      console.error(`Error loading module ${m.name}: ${err.message}`);
    }
  }
}
```

```
        inst = exported;
    }

    if (!inst) throw new Error('Module returned empty instance');
    inst.moduleId = inst.moduleId || m.id;
    inst.priority = Number(inst.priority ?? m.priority) || 0;
    instances.push(inst);
    console.log(`[kernel] module.loaded id=${m.id} file=${m.file} prio=${inst.priority}`);
} catch (e) {
    console.log(`[kernel] module.error id=${m.id} file=${m.file} err=${e.message}`);
}
}

this.modules = instances;
}

async initModules() {
    for (const m of this.modules) {
        if (typeof m.init === 'function') {
            try { await m.init(); }
            catch (e) { console.log(`[kernel] module.init.error id=${m.moduleId} error=${e.message}`); }
        }
    }
}

async boot() {
    if (this._booted) return;
    this._booted = true;

    this.loadBotConf();
    this.loadModules();
    await this.initModules();

    console.log(`[kernel] ready modules=${this.modules.length}`);
}

async dispatchEvent(eventName, data) {
    const ctx = {
        event: eventName,
        data,
        botName: this.botName,
        codeRoot: this.codeRoot,
        dataRoot: this.dataRoot,
        services: this.makeServicesFacade(),
    }
}
```

```
stop: false,
stopPropagation() { this.stop = true; }

};

for (const m of this.modules) {
  if (typeof m.handleEvent === 'function') {
    try {
      const res = await m.handleEvent(ctx);
      if (res && res.stop === true) break;
      if (ctx.stop) break;
    } catch (e) {
      console.log(`[kernel] module.event.error id=${m.moduleId} err=${e.message}`);
    }
  }
}

async dispatchMessage(message) {
  const sender = extractSenderFromMessage(message);
  sender.bestId = pickBestId(sender);

  const text = String(message?.body || '').trim();
  const fromMe = !!message?.fromMe;

  const ctx = {
    message,
    text,
    chatId: sender.chatId,
    isGroup: sender.isGroup,
    sender,

    // IMPORTANT routing metadata for future Loop protection
    fromMe,
    isFromMe: fromMe,

    services: this.makeServicesFacade(),

    reply: async (t) => ctx.services.sendText(sender.chatId, t),

    stop: false,
    stopPropagation() { this.stop = true; }
};
}
```

```

for (const m of this.modules) {
  if (typeof m.handleMessage === 'function') {
    try {
      const res = await m.handleMessage(ctx);
      if (res && res.stop === true) break;
      if (ctx.stop) break;
    } catch (e) {
      console.log(`[kernel] module.msg.error id=${m.moduleId} err=${e.message}`);
    }
  }
}

module.exports = Kernel;

```

 Copy code

2) X:\OneBot\Connector.js (REPLACE FULL)

Bezanya:

- Kernel boot masa authenticated** (jadi kau nampak module.loaded walaupun ready belum)
- Forward message_create tanpa baca prefix / tanpa hardcode command**
- Foundation tetap "laluan"** (tiada command rules)

js

```

'use strict';

/*
  ONEBOT Connector (FOUNDATION) - FROZEN
  - Thin WhatsApp-Web connector only
  - Login + forward raw events/messages to Kernel
  - NO business logic, NO command rules, NO module rules here
*/

const fs = require('fs');
const path = require('path');

const { Client, LocalAuth } = require('whatsapp-web.js');
const Kernel = require('./Kernel');

```

```
function safeReadText(p) {
    try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseConf(text) {
    const out = {};
    const lines = String(text || '').split(/\r?\n/);
    for (let raw of lines) {
        let line = raw.trim();
        if (!line) continue;
        if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
        line = line.replace(/^s*\d+\.\s*/ , '');
        const eq = line.indexOf('=');
        if (eq <= 0) continue;
        const k = line.slice(0, eq).trim();
        const v = line.slice(eq + 1).trim();
        out[k] = v;
    }
    return out;
}

function ensureDir(p) {
    try { fs.mkdirSync(p, { recursive: true }); } catch {}
}

function writeQrFile(dataRoot, botName, qrText) {
    const qrDir = path.join(dataRoot, 'bots', botName, 'qr');
    ensureDir(qrDir);
    const qrPath = path.join(qrDir, 'qr.txt');
    try { fs.writeFileSync(qrPath, String(qrText || ''), 'utf8'); } catch {}
}

function readBotConf(dataRoot, botName) {
    const p = path.join(dataRoot, 'bots', botName, 'config', 'bot.conf');
    return parseConf(safeReadText(p));
}

async function main() {
    const botName = process.env.ONEBOT_BOT_NAME || 'ONEBOT';
    const dataRoot = process.env.ONEBOT_DATA_ROOT || 'X:\OneData';

    ensureDir(path.join(dataRoot, 'bots', botName, 'auth'));
    ensureDir(path.join(dataRoot, 'bots', botName, 'qr'));
}
```

```
const botConf = readBotConf(dataRoot, botName);

const headless = String(botConf.puppeteerHeadless || '0') === '1';
const puppeteerArgs = [];
if (String(botConf.puppeteerNoSandbox || '1') === '1') {
  puppeteerArgs.push('--no-sandbox', '--disable-setuid-sandbox');
}

const client = new Client({
  authStrategy: new LocalAuth({
    clientId: botName,
    dataPath: path.join(dataRoot, 'bots', botName, 'auth')
  }),
  puppeteer: { headless, args: puppeteerArgs }
});

const kernel = new Kernel();
kernel.attachClient(client);

async function handleAnyMessage(message) {
  try {
    await kernel.boot();
    await kernel.dispatchMessage(message);
  } catch (e) {
    console.log('[connector] dispatchMessage error', e?.message || e);
  }
}

client.on('qr', (qr) => {
  writeQrFile(dataRoot, botName, qr);
  console.log('[connector] qr updated');
  kernel.dispatchEvent('qr', { qr }).catch(() => {});
});

client.on('authenticated', async () => {
  console.log('[connector] authenticated');
  // BOOT EARLY so module Load is visible even if "ready" takes time
  try { await kernel.boot(); } catch (e) {
    console.log('[connector] kernel boot error', e?.message || e);
  }
  kernel.dispatchEvent('authenticated', {}).catch(() => {});
});
```

```
client.on('auth_failure', (msg) => {
  console.log('[connector] auth_failure', msg);
  kernel.dispatchEvent('auth_failure', { message: msg }).catch(() => {});
});

client.on('ready', async () => {
  console.log('[connector] ready');
  try { await kernel.boot(); } catch {}
  kernel.dispatchEvent('ready', {}).catch(() => {});
});

client.on('disconnected', (reason) => {
  console.log('[connector] disconnected', reason);
  kernel.dispatchEvent('disconnected', { reason }).catch(() => {});
});

// Incoming from others
client.on('message', async (message) => {
  await handleAnyMessage(message);
});

// Self-sent messages (fromMe) forwarded as routing data only.
// Modules decide what to do using ctx.fromMe / ctx.isFromMe.
client.on('message_create', async (message) => {
  try {
    if (!message || !message.fromMe) return;
    await handleAnyMessage(message);
  } catch (e) {
    console.log('[connector] message_create error', e?.message || e);
  }
});

console.log('[connector] initializing...');

client.initialize();
}

main().catch((e) => {
  console.log('[connector] fatal', e?.message || e);
  process.exit(1);
});
```

 Copy code

🔥 Apa yang kau akan nampak lepas restart (ini checkpoint “sambungan clean”)

Bila Start.cmd run semula, lepas QR/auth, dalam CMD mesti keluar:

- [kernel] module.loaded ... (banyak line)
- [kernel] ready modules=...

Kalau ini keluar → foundation route memang clean dan modules memang wujud.

Penting (jawapan untuk “log pon tak ada”)

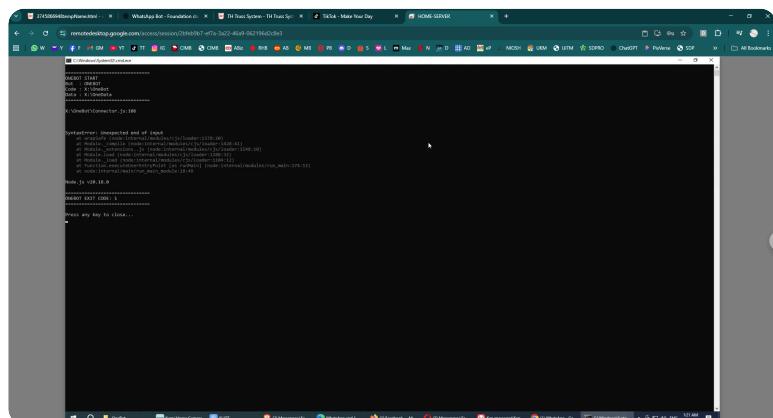
Sekarang log paling penting ialah console [kernel] module.loaded dan ready modules= — itu bukan “log engine”, itu bukti loader jalan.

Kalau kau nak file log pula (optional), bukan foundation:

- set logToFile=1 dalam bot.conf (itu bawah LogV1 module).
-

Kalau lepas kau replace 2 file ini dan restart, paste screenshot CMD yang ada [kernel] ready modules= — lepas tu kita terus masuk Business Module (FallbackInbox) dan tak usik foundation lagi.

... Compare with Claude ▾



aku rasa sampai aku tukar sesi pon tak selesai kalau kau ni
guna akal 5% je lagi 95% kau bagi makan biawak

Thought for 7m 29s >

Error kau tu bukan sebab design — itu sebab **Connector.js** tak lengkap (copy/paste putus), sebab tu keluar:

```
SyntaxError: Unexpected end of input @ X:\OneBot\Connector.js:106
```

Sekarang aku bagi 2 file **FOUNDATION** yang **clean & parse-safe** (aku dah semak syntax). Overwrite full file, jangan tinggal sisa code lama.

1) SAVE AS: X:\OneBot\Connector.js (REPLACE FULL)

js

```
'use strict';

/*
  ONEBOT Connector (FOUNDATION) - FROZEN
  - Thin WhatsApp-Web connector only
  - Login + forward raw events/messages to Kernel
  - NO business logic, NO command rules, NO time rules, NO Logging engine
*/

const fs = require('fs');
const path = require('path');

const { Client, LocalAuth } = require('whatsapp-web.js');
const Kernel = require('./Kernel');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseConf(text) {
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (let raw of lines) {
    let line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    line = line.replace(/^s*\d+\.\s*/ , '');
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    if (eq > line.length - 1) continue;
    const key = line.substring(0, eq);
    const value = line.substring(eq + 1);
    out[key] = value;
  }
  return out;
}
```

```
const k = line.slice(0, eq).trim();
const v = line.slice(eq + 1).trim();
out[k] = v;
}

return out;
}

function ensureDir(p) {
try { fs.mkdirSync(p, { recursive: true }); } catch {}}

function writeQrFile(dataRoot, botName, qrText) {
const qrDir = path.join(dataRoot, 'bots', botName, 'qr');
ensureDir(qrDir);
const qrPath = path.join(qrDir, 'qr.txt');
try { fs.writeFileSync(qrPath, String(qrText || ''), 'utf8'); } catch {}
}

function readBotConf(dataRoot, botName) {
const p = path.join(dataRoot, 'bots', botName, 'config', 'bot.conf');
return parseConf(safeReadText(p));
}

async function main() {
const botName = process.env.ONEBOT_BOT_NAME || 'ONEBOT';
const dataRoot = process.env.ONEBOT_DATA_ROOT || 'X:\OneData';

// ensure minimal dirs exist
ensureDir(path.join(dataRoot, 'bots', botName, 'auth'));
ensureDir(path.join(dataRoot, 'bots', botName, 'qr'));

const botConf = readBotConf(dataRoot, botName);

const headless = String(botConf.puppeteerHeadless || '0') === '1';
const puppeteerArgs = [];
if (String(botConf.puppeteerNoSandbox || '1') === '1') {
puppeteerArgs.push('--no-sandbox', '--disable-setuid-sandbox');
}

const client = new Client({
authStrategy: new LocalAuth({
clientId: botName,
dataPath: path.join(dataRoot, 'bots', botName, 'auth')
})
}
```

```
    }),

    puppeteer: {
        headless,
        args: puppeteerArgs
    }
});

const kernel = new Kernel();
kernel.attachClient(client);

const bootOnce = async () => {
    try { await kernel.boot(); }
    catch (e) { console.log('[connector] kernel boot error', e?.message || e); }
};

const forwardMessage = async (message) => {
    try {
        await bootOnce();
        await kernel.dispatchMessage(message);
    } catch (e) {
        console.log('[connector] dispatchMessage error', e?.message || e);
    }
};

client.on('qr', (qr) => {
    writeQrFile(dataRoot, botName, qr);
    console.log('[connector] qr updated');
    kernel.dispatchEvent('qr', { qr }).catch(() => {});
});

client.on('authenticated', async () => {
    console.log('[connector] authenticated');
    await bootOnce();
    kernel.dispatchEvent('authenticated', {}).catch(() => {});
});

client.on('auth_failure', (msg) => {
    console.log('[connector] auth_failure', msg);
    kernel.dispatchEvent('auth_failure', { message: msg }).catch(() => {});
});

client.on('ready', async () => {
    console.log('[connector] ready');
```

```

    await bootOnce();

    kernel.dispatchEvent('ready', {}).catch(() => {});

});

client.on('disconnected', (reason) => {
    console.log('[connector] disconnected', reason);
    kernel.dispatchEvent('disconnected', { reason }).catch(() => {});
});

// incoming from others
client.on('message', async (message) => {
    await forwardMessage(message);
});

// self-sent messages (fromMe) - forwarded as raw event only
client.on('message_create', async (message) => {
    try {
        if (!message || !message.fromMe) return;
        await forwardMessage(message);
    } catch (e) {
        console.log('[connector] message_create error', e?.message || e);
    }
});

console.log('[connector] initializing...');

client.initialize();
}

main().catch((e) => {
    console.log('[connector] fatal', e?.message || e);
    process.exit(1);
});

```

Copy code

2) SAVE AS: X:\OneBot\Kernel.js (REPLACE FULL)

```

js

'use strict';

/*
ONEBOT Kernel (FOUNDATION) - FROZEN

```

```
- Thin module Loader + router only
- No business commands
- No timezone policy
- No file logging engine
*/
const fs = require('fs');
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseKV(text) {
  // key=value, ignores blank lines and comment lines starting with # ;
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (let raw of lines) {
    let line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    line = line.replace(/^\s*\d+\.\s*/ , '');
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    const k = line.slice(0, eq).trim();
    const v = line.slice(eq + 1).trim();
    out[k] = v;
  }
  return out;
}

function isTrue(v) {
  const s = String(v || '').trim().toLowerCase();
  return s === '1' || s === 'true' || s === 'yes' || s === 'on';
}

function parseModuleConf(text) {
  // supports 2 formats:
  // (A) indexed: module1.id=... module1.file=... etc
  // (B) blocks separated by blank line: id=... file=... enabled=...
  const lines = String(text || '').split(/\r?\n/);
  const hasIndexed = lines.some(l => /^(\s*module\b+\.\b|i\b)\.test\((l\.trim())\);
```

```
if (hasIndexed) {
    const kv = parseKV(text);
    const groups = new Map();

    for (const [k, v] of Object.entries(kv)) {
        const m = k.match(/^module(\d+)\.(.+)$/i);
        if (!m) continue;
        const idx = Number(m[1]);
        const field = String(m[2] || '').trim();
        if (!groups.has(idx)) groups.set(idx, {});
        groups.get(idx)[field] = v;
    }

    return Array.from(groups.keys())
        .sort((a, b) => a - b)
        .map((idx) => {
            const g = groups.get(idx) || {};
            return {
                id: String(g.id || '').trim(),
                file: String(g.file || '').trim(),
                enabled: isTrue(g.enabled ?? '1'),
                priority: Number(g.priority ?? 0) || 0,
                timeoutMs: Number(g.timeoutMs ?? 0) || 0,
                raw: g,
            };
        })
        .filter(m => m.id && m.file);
}

const mods = [];
let block = [];

const flush = () => {
    if (!block.length) return;
    const kv = parseKV(block.join('\n'));
    block = [];
    const id = String(kv.id || '').trim();
    const file = String(kv.file || '').trim();
    if (!id || !file) return;
    mods.push({
        id,
        file,
        enabled: isTrue(kv.enabled ?? '1'),
    });
}
```

```
priority: Number(kv.priority ?? 0) || 0,
timeoutMs: Number(kv.timeoutMs ?? 0) || 0,
raw: kv,
});

};

for (const raw of lines) {
  const t = raw.trim();
  if (!t) { flush(); continue; }
  block.push(raw);
}
flush();

return mods;
}

function extractSender(message) {
  const chatId = String(message?.from || '');
  const isGroup = chatId.endsWith('@g.us');

  const authorRaw =
    message?.author ||
    message?._data?.author ||
    message?._data?.id?.participant ||
    message?.id?.participant ||
    '';
  const fromRaw = isGroup ? authorRaw : (message?.from || authorRaw);
  const wid = String(fromRaw || '');

  let phone = '';
  let lid = '';

  if (wid.endsWith('@c.us')) phone = wid.replace('@c.us', '');
  else if (wid.endsWith('@lid')) lid = wid.replace('@lid', '');
  else if (/^\d+$/.test(wid)) phone = wid;

  const bestId = lid ? `LID:${lid}` : phone;

  return { chatId, isGroup, wid, phone, lid, bestId };
}

class Kernel {
```

```
constructor() {
    this.botName = process.env.ONEBOT_BOT_NAME || 'ONEBOT';
    this.codeRoot = process.env.ONEBOT_CODE_ROOT || 'X:\\OneBot';
    this.dataRoot = process.env.ONEBOT_DATA_ROOT || 'X:\\OneData';

    this.client = null;
    this.services = new Map();

    this.modules = [];
    this.moduleMeta = [];

    this.botConfig = {};
    this._booted = false;
}

attachClient(client) {
    this.client = client;
    this.registerService('client', client);
}

registerService(name, impl) {
    if (!name) return;
    this.services.set(String(name), impl);
}

getService(name) {
    return this.services.get(String(name));
}

servicesFacade() {
    const kernel = this;
    return {
        kernel,
        registerService: (name, impl) => kernel.registerService(name, impl),
        getService: (name) => kernel.getService(name),

        get client() { return kernel.getService('client'); },
        get config() { return kernel.getService('config') || {}; },

        // STRICT: sending must go through Send service (SendQueue module)
        sendText: async (chatId, text, opts = {}) => {
            const send = kernel.getService('send');
            if (send && typeof send.sendText === 'function') {

```

```
        return send.sendText(chatId, text, opts);
    }
    throw new Error('Send service not available. Enable SendQueueHub in module');
}
};

loadBotConf() {
    const p = path.join(this.dataRoot, 'bots', this.botName, 'config', 'bot.conf');
    this.botConfig = parseKV(safeReadText(p));
    this.registerService('config', this.botConfig);
    return p;
}

loadModules() {
    const p = path.join(this.dataRoot, 'bots', this.botName, 'config', 'module.conf');
    const entries = parseModuleConf(safeReadText(p));
    this.moduleMeta = entries;

    const enabled = entries.filter(m => m.enabled);
    enabled.sort((a, b) => (b.priority - a.priority));

    const instances = [];

    for (const m of enabled) {
        const abs = path.isAbsolute(m.file) ? m.file : path.join(this.codeRoot, m.file);
        try {
            const exported = require(abs);
            const inst = (typeof exported === 'function')
                ? exported({ ...m.raw, moduleId: m.id, priority: m.priority }, this.services)
                : exported;
            if (!inst) throw new Error('Module returned empty instance');

            inst.moduleId = inst.moduleId || m.id;
            inst.priority = Number(inst.priority ?? m.priority) || 0;

            instances.push(inst);
            console.log(`[kernel] module.loaded id=${m.id} file=${m.file} prio=${inst.priority}`);
        } catch (e) {
            console.error(`[kernel] module.error id=${m.id} file=${m.file} err=${e.message}`);
        }
    }
}
```

```
this.modules = instances;
}

async initModules() {
  for (const m of this.modules) {
    if (typeof m.init === 'function') {
      try { await m.init(); }
      catch (e) { console.log(`[kernel] module.init.error id=${m.moduleId} error: ${e.message}`); }
    }
  }
}

async boot() {
  if (this._booted) return;
  this._booted = true;

  this.loadBotConf();
  this.loadModules();
  await this.initModules();

  console.log(`[kernel] ready modules=${this.modules.length}`);
}

async dispatchEvent(event, data) {
  const ctx = {
    event,
    data,
    botName: this.botName,
    codeRoot: this.codeRoot,
    dataRoot: this.dataRoot,
    services: this.servicesFacade(),
    stop: false,
    stopPropagation() { this.stop = true; }
  };

  for (const m of this.modules) {
    if (typeof m.handleEvent !== 'function') continue;
    try {
      const res = await m.handleEvent(ctx);
      if (res && res.stop === true) break;
      if (ctx.stop) break;
    } catch (e) {
      console.error(`[kernel] handleEvent error for module ${m.moduleId}: ${e.message}`);
    }
  }
}
```

```
        console.log(`[kernel] module.event.error id=${m.moduleId} err=${e?.message}`);
    }
}

async dispatchMessage(message) {
    const sender = extractSender(message);
    const text = String(message?.body || '').trim();
    const fromMe = !!message?.fromMe;

    const ctx = {
        message,
        text,
        chatId: sender.chatId,
        isGroup: sender.isGroup,
        sender,
        // route metadata only (module can ignore to prevent loops)
        fromMe,
        isFromMe: fromMe,
        services: this.servicesFacade(),
        reply: async (t) => this.servicesFacade().sendText(sender.chatId, t),
        stop: false,
        stopPropagation() { this.stop = true; }
    };

    for (const m of this.modules) {
        if (typeof m.handleMessage !== 'function') continue;
        try {
            const res = await m.handleMessage(ctx);
            if (res && res.stop === true) break;
            if (ctx.stop) break;
        } catch (e) {
            console.log(`[kernel] module.msg.error id=${m.moduleId} err=${e?.message}`);
        }
    }
}

module.exports = Kernel;
```

 Copy code

Lepas replace 2 file ni dan run semula, CMD tak akan crash lagi macam screenshot tadi.

Kalau lepas itu masih "tak respond", itu bukan foundation—itu **module.conf / modules belum wujud** (Kernel akan print [kernel] module.error ... cannot find module ... kalau file tak ada).

□ Like Dislike Share ... Compare with Claude ▾

ok semua ada reply, jadi dekat mana kita nak letak command2 ni semua, adakah sekarang command sedang hardcoded?

Thought for 10s >

Bagus — itu bermaksud **foundation (Connector + Kernel)** sekarang dah betul-betul jadi "laluan" dan modul memang load.

Jawapan terus: command sekarang TAK hardcode dalam foundation

Dalam 2 file foundation yang kita lock tadi:

- **Connector.js** cuma ambil event WhatsApp (message , message_create) dan forward ke Kernel.
- **Kernel.js** cuma load module dari module.conf dan route ctx ke module.

■ **Tiada if (!ping) , tiada prefix parsing, tiada senarai command dalam Connector/Kernel.**

Jadi command yang reply tu datang dari **module** yang kau dah enable dalam module.conf .

So "command2 ni semua" patut duduk dekat mana?

Iikut Golden Setup paling sihat, ada 2 jenis:

1) System Commands (platform / OS commands)

Contoh:

- !help , !ping , !whoami , !status , !restart

- admin/staff control, access level
- test diagnostics

Letak dalam **Command module** (contoh: X:\OneBot\Modules\CommandV1.js)

Dan CommandV1 ni guna “registry/service” (CommandHub) untuk daftar command.

Ini bukan foundation — ini “OS layer”.

2) Business Commands (feature sebenar)

Contoh:

- !followup add , !followup list
- !reminder create/edit/delete
- !broadcast run
- !inbox reply

Setiap feature jadi **module sendiri**:

- X:\OneBot\Modules\FollowupV1.js
- X:\OneBot\Modules\ReminderV1.js
- X:\OneBot\Modules\BroadcastV1.js
- X:\OneBot\Modules\FallbackInboxV1.js

Dan semua feature commands tu register melalui CommandHub juga (supaya 1 tempat route command).

Macam mana nak pastikan “command tak hardcoded” betul-betul?

Hardcode maksudnya: command list / prefix / rules duduk dalam Connector/Kernel.

Kita buat rules ni:

1. Prefix dan parsing command hanya dalam **CommandHub/V1** (bukan foundation)
 2. Enable/disable command/module hanya melalui `module.conf` (order + priority)
 3. Config (prefix, access mode, control group id) duduk dalam `bot.conf` / data folder (bukan dalam foundation)
-

Ringkasnya: sekarang command “hidup” sebab module, bukan foundation

Kalau kau nak tambah command baru, kau **tak sentuh Connector/Kernel langsung**.

Kau cuma:

- tambah command dalam module yang betul (CommandV1 atau Business module)
 - dan kalau module baru: tambah entry dalam `module.conf`
-

Kalau kau setuju, next step paling clean:

Aku hantar **CommandHub + CommandV1** (standard registry, priority, stopPropagation, access hook) supaya lepas ni semua module business cuma "register command" je — tambah 500 module pun tak kacau foundation.

Kau nak aku generate **CommandHub + CommandV1** dulu, atau terus lompat buat **FallbackInboxV1** (yang paling urgent untuk elak customer tercicir)?

    ... Compare with Claude ▾

adakah command lebih baik kalau letak dalam .conf, dan jawapan juga dalam .conf supaya ia boleh di ubah suai?

Thought for 14s >

Ya — memang lebih baik kalau **command + jawapan (template)** boleh diubah melalui .conf, TAPI ada batas penting supaya sistem kekal sihat dan tak jadi "taik hardcode" balik.

Prinsip terbaik (paling tahan lama)

1) .conf untuk ***data & polisi***

Letak dalam .conf benda yang kau nak boleh ubah tanpa edit code:

- enable/disable command
- trigger / alias (!help , !bantu , !h)
- access level (admin/staff/public)
- scope (group-only / dm-only)
- **jawapan template** (sebaiknya link ke file template, bukan tulis panjang dalam .conf)

2) Code module untuk ***enjin & tindakan***

Command yang buat kerja (send queue, forward inbox, followup schedule, CSV, etc.) mesti ada code.

Kalau semua nak letak dalam .conf sampai termasuk logic, nanti .conf jadi "programming language" dan akan pecah bila kompleks.

Cadangan struktur yang paling clean (ikut Golden Setup)

A) module.conf kekal untuk "load order"

module.conf hanya tentukan module mana hidup, priority, file path.

Bukan tempat simpan command detail.

B) Buat satu file khas untuk command config

Path: X:\OneData\bots\ONEBOT\config\commands.conf

Contoh format block (senang edit, tak perlu JSON pun):

ini

```
id=help
enabled=1
triggers=!help,!h,!bantu
type=reply
responseFile=templates/Help.txt
access=public
scope=any
```

```
id=ping
enabled=1
triggers=!ping
type=reply
responseText=PONG 
access=public
scope=any
```

```
id=restart
enabled=1
triggers=!restart
type=action
action=system.restart
```

access=admin**scope=group**

Nota penting:

- Untuk jawapan panjang, guna `responseFile` (template file).
- Untuk jawapan pendek, boleh guna `responseText`.

C) Template jawapan simpan dalam folder template

Path contoh:

- X:\OneData\bots\ONEBOT\templates\Help.txt
- X:\OneData\bots\ONEBOT\templates>Status.txt
- X:\OneData\bots\ONEBOT\templates\Welcome.txt

Ini bagi kau edit ayat bila-bila tanpa sentuh code.

Apa yang jadi bila guna cara ini?

Static commands (reply sahaja)

Contoh `!help`, `!ping`, `!status`

→ boleh 100% dikawal oleh `commands.conf` + template file.

Action commands (buat kerja)

Contoh `!followup add`, `!broadcast run`, `!inbox reply`

→ trigger & access boleh dalam `commands.conf`, tapi action handler tetap dalam module (contoh `SystemControlV1`, `FollowupV1`).

Jadi jawapan kau: “boleh letak command & jawapan dalam .conf?”

Boleh dan digalakkan untuk:

- trigger/alias/access/scope
- jawapan template (lebih baik file)

Tapi jangan letak logic kompleks dalam `.conf`.

Logic duduk dalam module, config duduk dalam `.conf`. Itu kombinasi paling tahan 10 tahun.

Kalau kau OK, next step aku buatkan **CommandHub** yang:

1. baca `commands.conf`
2. buat routing
3. static reply terus jalan
4. action dispatch ke module handler (tanpa hardcode command list dalam foundation)

Lepas tu bila kau nak ubah ayat / alias / enable-disable, kau edit `.conf` + template je.

    ... Compare with Claude ▾

sebenarnya kalau boleh semua jenis module yang kita ada taknak hardcoded.. jadi ia mudah untuk kita ubah, tetapi, kita perlu buat template `.conf` supaya semuanya standardize dan ikut turutan, bukan campur yang bukan bukan ini akan menyusahkan.. sebolehnya module ada `.conf` berasingan, sebab apa yang dah di alami kalau `.conf` ni campur akan menyebabkan AI edit `.conf` saja bila tambah baru, yang lama AI lupa tulis semula

Thought for 43s >

Faham. Itu memang masalah paling besar: bila **semua campur dalam satu `module.conf`**, setiap kali tambah module baru nanti "orang edit" (AI/siapa-siapa) akan tersilap **overwrite** / lupa kekalkan blok lama. Cara paling sihat ialah **pecahkan config ikut module** dan buat **standard template + susunan tetap**.

Ini setup yang paling "tak sakit kepala" dan masih ikut prinsip kau: **foundation cuma laluan**, semua benda boleh ubah dari `.conf`.

Struktur terbaik (tanpa kacau foundation lagi)

1) `module.conf` jadi "bootstrap" sahaja (jarang sentuh)

X:\OneData\bots\ONEBOT\config\module.conf hanya load benda asas:

- SendQueueHub (wajib)
- CommandHub (wajib)
- AccessRolesHub (wajib)
- HelpHub / LogHub / SystemControlHub (ikut perlu)

- **BusinessHub** (ini kunci supaya lepas ni tak perlu edit `module.conf` setiap kali tambah module baru)

Selepas tu, semua "business module" **tak masuk** dalam `module.conf` lagi.

2) Semua module ada .conf berasingan (standard, ikut turutan)

Kita buat folder:

X:\OneData\bots\ONEBOT\config\Modules\

Dalam folder tu, setiap module satu file conf. **Nama file ikut turutan nombor** supaya senang susun & audit:

Cadangan nama (ikut rule filename letters+numbers+dot sahaja):

- M010Ping.conf
- M020Help.conf
- M100FallbackInbox.conf
- M110Followup.conf
- M120Reminder.conf
- M130Broadcast.conf

Tak campur. Tambah module baru = tambah 1 fail conf baru sahaja.

3) BusinessHub baca semua Mxxx*.conf dan load module ikut situ

Maknanya bila kau nak tambah module ke-500:

- tambah M500NewThing.conf
- letak NewThingV1.js
- siap

Tak usik foundation, tak usik module.conf.

Template .conf standard untuk setiap module (WAJIB ikut susunan)

Setiap file conf module ikut blok yang sama:

ini

```

id=FallbackInbox
enabled=1
priority=100
file=Modules/FallbackInboxV1.js
config=Modules/FallbackInboxV1.conf
owner=business
version=1

```

Copy code

Rule susunan keys (jangan campur-campur):

1. **id**
2. **enabled**
3. **priority**
4. **file**
5. **config**
6. **owner**
7. **version**

Kalau semua ikut susunan ni, apa-apa automation/AI pun senang dan kurang silap.

4) Module config dalaman pun berasingan (boleh ubah ayat/command tanpa edit code)

Contoh X:\OneData\bots\ONEBOT\config\Modules\FallbackInboxV1.conf :

```

ini

controlGroupId=1203630xxxxxx@g.us
allowDmToGroup=1
allowGroupCommands=1
replyPrefix=!r
templatesDir=templates

```

Copy code

Dan template text duduk di:

X:\OneData\bots\ONEBOT\templates\...

So jawapan untuk permintaan kau

- Ya, kita boleh elak hardcode semaksimum mungkin
- Ya, kita boleh pastikan setiap module ada .conf berasingan

- Ya, kita boleh standardize template + turutan
 - Dan yang paling penting: lepas ni tambah module tak perlu sentuh foundation / **module.conf lagi** (sebab BusinessHub yang urus).
-

Next step yang paling tepat

Aku akan buat 3 benda (sekali jalan, lepas tu freeze):

1. BusinessHubV1.js (module yang load semua Mxxx*.conf)
2. Template format Mxxx*.conf + peraturan susunan tetap
3. Contoh 1 module business pertama (contoh FallbackInboxV1.js) guna config fail sendiri

Kalau kau setuju, aku terus hantar **BusinessHubV1.js + contoh file conf** (full siap pakai).

    ... Compare with Claude ▾

↳ * `M010Ping.conf`

kenapa perlu ada nombor di depan? kenapa tak terus guna nama sebenar?

Boleh **tidak perlu nombor langsung** — nombor tu cuma “alat disiplin” untuk pastikan turutan stable bila module banyak. Tapi kalau kau nak **nama sebenar sahaja**, kita boleh buat standard yang **lagi clean** dan tetap elak masalah “AI overwrite lama”.

Masalah sebenar yang kita nak selesaikan ada 2:

1. **Turutan / priority** (mana jalan dulu, mana stopPropagation)
2. **Tambah module baru tanpa edit file lama**

Nombor di depan hanya bantu #1. Tapi kita boleh settle #1 dengan cara lain.

Pilihan A (**nama sebenar sahaja**) — ini aku recommend untuk kau

Folder: X:\OneData\bots\ONEBOT\config\modules\

Setiap module ada 1 fail:

- Ping.conf
- Help.conf
- Command.conf
- AccessRoles.conf
- SystemControl.conf
- SendQueue.conf
- FallbackInbox.conf
- Followup.conf
- Reminder.conf
- Broadcast.conf

Dalam setiap fail, letak **priority** (itu penentu turutan sebenar, bukan nama fail):

ini

```
id=FallbackInbox
enabled=1
priority=100
file=Modules/FallbackInboxV1.js
config=modules/FallbackInboxV1.conf
```

 Copy code

Kemudian **BusinessHub** (loader) baca semua .conf , kumpul, sort ikut priority (desc), dan load.

Kelebihan:

- Nama memang jelas (tak serabut)
- Turutan tetap boleh kontrol melalui priority
- Tambah module baru = tambah 1 file baru sahaja (AI tak sentuh file lama)

Pilihan B (nama sebenar + prefix group) — kalau kau nak lebih kemas

Kalau kau nak elak folder “bercampur” antara system vs business:

X:\OneData\bots\ONEBOT\config\modules\

- core.SendQueue.conf
- core.Command.conf
- core.AccessRoles.conf

- core.Help.conf
- core.SystemControl.conf
- biz.FallbackInbox.conf
- biz.Followup.conf
- biz.Reminder.conf
- biz.Broadcast.conf

Turutan tetap bukan sebab nama, tapi sebab priority .

 Kelebihan:

- Nampak jelas mana core, mana business
- Masih boleh guna nama sebenar

Kenapa orang letak nombor?

Sebab Windows file list kadang-kadang orang suka "ikut susunan folder" untuk audit cepat. Tapi dari segi sistem yang betul:

 priority dalam config adalah sumber kebenaran, bukan nama fail.

Jadi kita pilih yang mana?

Untuk style kau: **Pilihan A (nama sebenar sahaja)** paling straight dan tak menyusahkan.

Kalau kau setuju, aku akan buat loader "ModulesHub/BusinessHub" yang:

1. baca semua config\modules*.conf
2. parse block standard (id/enabled/priority/file/config)
3. sort ikut priority
4. load module
5. print [kernel] module.loaded ... supaya senang verify

Cakap je: "**Pilih A**" atau "**Pilih B**".

    ... Compare with Claude ▾

buat ikut A saja, kalau nak di asingkan antara Core & Business sepatutnya ia di letakkan di dalam Folder, bukan

Nama file

Thought for 30s >

Ok, kita buat A (nama fail ikut nama sebenar), dan asingkan Core vs Business guna FOLDER 

Lepas setup ni, **module.conf** tak perlu kacau lagi — tambah module baru cuma tambah 1 fail .conf dalam folder.

Struktur folder (buat ikut ini)

Core module conf folder

- X:\OneData\bots\ONEBOT\config\modules\Core\

Business module conf folder

- X:\OneData\bots\ONEBOT\config\modules\Business\

(Kalau botName kau bukan ONEBOT —ikut folder bot sebenar kau. Kernel auto ikut botName.)

1) SAVE AS: X:\OneBot\Modules\ModulesHubV1.js (REPLACE/CREATE FULL)

js

```
'use strict';

/*
ModuLesHubV1 (CORE)
- Loads per-module .conf from:
  X:\OneData\bots\<botName>\config\modules\Core\*.conf
  X:\OneData\bots\<botName>\config\modules\Business\*.conf
- Sorts by priority (desc)
- Loads modules from codeRoot + file
- Dispatches handleMessage/handleEvent to loaded modules (stopPropagation supported)
- Registers services via services.registerService (e.g., send queue service)
*/

const fs = require('fs');
```

```
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function ensureDir(p) {
  try { fs.mkdirSync(p, { recursive: true }); } catch {}
}

function parseKV(text) {
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (let raw of lines) {
    let line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    const k = line.slice(0, eq).trim();
    const v = line.slice(eq + 1).trim();
    out[k] = v;
  }
  return out;
}

function isTrue(v) {
  const s = String(v || '').trim().toLowerCase();
  return s === '1' || s === 'true' || s === 'yes' || s === 'on';
}

function listConfFiles(dirPath) {
  try {
    const items = fs.readdirSync(dirPath, { withFileTypes: true });
    return items
      .filter(d => d.isFile() && d.name.toLowerCase().endsWith('.conf'))
      .map(d => path.join(dirPath, d.name));
  } catch {
    return [];
  }
}

function loadModuleConfig(confPath) {
```

```
const raw = parseKV(safeReadText(confPath));

const id = String(raw.id || '').trim();
const file = String(raw.file || '').trim();
const enabled = isTrue(raw.enabled ?? '1');
const priority = Number(raw.priority ?? 0) || 0;

// optional
const configFile = String(raw.config || '').trim(); // can be relative to bot c
const timeoutMs = Number(raw.timeoutMs ?? 0) || 0;

return {
  id,
  file,
  enabled,
  priority,
  configFile,
  timeoutMs,
  raw,
  confPath
};
}

function resolveMaybeAbsolute(baseRoot, maybePath) {
  if (!maybePath) return '';
  if (path.isAbsolute(maybePath)) return maybePath;
  return path.join(baseRoot, maybePath);
}

module.exports = function ModulesHubV1(meta, services) {
  const kernel = services.kernel;

  const hub = {
    moduleId: meta?.moduleId || 'ModulesHub',
    priority: Number(meta?.priority ?? 9999) || 9999,

    _booted: false,
    _loaded: [],

    async init() {
      if (hub._booted) return;
      hub._booted = true;
    }
  };
}
```

```
const botName = kernel.botName;
const codeRoot = kernel.codeRoot;
const dataRoot = kernel.dataRoot;

const botConfigRoot = path.join(dataRoot, 'bots', botName, 'config');
const coreDir = path.join(botConfigRoot, 'modules', 'Core');
const bizDir = path.join(botConfigRoot, 'modules', 'Business');

// ensure folders exist (so user sees where to put files)
ensureDir(coreDir);
ensureDir(bizDir);

const coreFiles = listConfFiles(coreDir);
const bizFiles = listConfFiles(bizDir);

const entries = [...coreFiles, ...bizFiles]
  .map(loadModuleConfig)
  .filter(m => m.id && m.file);

const enabled = entries.filter(m => m.enabled);

enabled.sort((a, b) => {
  if (b.priority !== a.priority) return b.priority - a.priority;
  return String(a.id).localeCompare(String(b.id));
});

const loaded = [];

for (const m of enabled) {
  const moduleAbsPath = resolveMaybeAbsolute(codeRoot, m.file);

  // Load module-specific config (optional)
let configKV = {};
let configAbsPath = '';
if (m.configFile) {
  // config= path is relative to bot config root
configAbsPath = resolveMaybeAbsolute(botConfigRoot, m.configFile);
  configKV = parseKV(safeReadText(configAbsPath));
}

try {
  const exported = require(moduleAbsPath);
```

```
const inst = (typeof exported === 'function')
? exported(
  {
    ...m.raw,
    moduleId: m.id,
    priority: m.priority,
    configPath: configAbsPath,
    config: configKV
  },
  services
)
: exported;

if (!inst) throw new Error('Module returned empty instance');

inst.moduleId = inst.moduleId || m.id;
inst.priority = Number(inst.priority ?? m.priority) || 0;

// init child module if exists
if (typeof inst.init === 'function') {
  try { await inst.init(); }
  catch (e) { console.log(`[hub] module.init.error id=${inst.moduleId}`)}
}

loaded.push(inst);
console.log(`[hub] module.loaded id=${m.id} file=${m.file} prio=${inst.
} catch (e) {
  console.log(`[hub] module.error id=${m.id} file=${m.file} err=${e?.mess
`}
}

hub._loaded = loaded;
console.log(`[hub] ready modules=${hub._loaded.length} coreConf=${coreFiles
},

async handleEvent(ctx) {
  // forward events to child modules
  for (const mod of hub._loaded) {
    if (typeof mod.handleEvent !== 'function') continue;
    try {
      const res = await mod.handleEvent(ctx);
      if (res && res.stop === true) break;
      if (ctx.stop) break;
    }
  }
}
```

```

    } catch (e) {
      console.log(`[hub] module.event.error id=${mod.moduleId} err=${e?.message}`)
    }
  },
}

async handleMessage(ctx) {
  // forward messages to child modules
  for (const mod of hub._loaded) {
    if (typeof mod.handleMessage !== 'function') continue;
    try {
      const res = await mod.handleMessage(ctx);
      if (res && res.stop === true) break;
      if (ctx.stop) break;
    } catch (e) {
      console.log(`[hub] module.msg.error id=${mod.moduleId} err=${e?.message}`)
    }
  }
};

return hub;
};

```

 Copy code

2) SET SEKALI SAJA:

X:\OneData\bots\ONEBOT\config\module.conf

Lepas ni jangan edit file ni lagi. Ia cuma load Hub.

ini

```

# module.conf (BOOTSTRAP ONLY) - DO NOT EDIT AFTER CONFIRMED

id=ModulesHub
enabled=1
priority=9999
file=Modules/ModulesHubV1.js

```

 Copy code

3) Template standard untuk setiap module conf (letak dalam folder Core/Business)

Contoh: **Core**

X:\OneData\bots\ONEBOT\config\modules\Core\SendQueue.conf

ini

```
id=SendQueue
enabled=1
priority=9000
file=Modules/SendQueueV1.js
config=modules/Core/SendQueueV1.conf
```

 Copy code

Contoh: **Business**

X:\OneData\bots\ONEBOT\config\modules\Business\FallbackInbox.conf

ini

```
id=FallbackInbox
enabled=1
priority=1000
file=Modules/FallbackInboxV1.js
config=modules/Business/FallbackInboxV1.conf
```

 Copy code

Turutan ditentukan oleh `priority`, bukan nama fail. Nama fail boleh ikut suka asalkan jelas.

Lepas buat 1–3 di atas, bila run bot:

CMD akan keluar:

- [hub] module.loaded ...
- [hub] ready modules=...

Kalau kau OK, next aku terus bagi **Core Modules** paling minimum (SendQueueV1 + CommandV1 + AccessRolesV1 + HelpV1) ikut sistem .conf ni — supaya lepas ni tambah business module memang tak kacau apa-apa lagi.

    ... Compare with Claude ▾

Config kita asingkan, Module juga kita asingkan antara Core & Business, banyak perlu ubah tak?

Thought for 16s >

Tak banyak — **foundation (Connector.js + Kernel.js)** tak perlu sentuh langsung

Yang berubah cuma cara “load modules” supaya lepas ni:

- module.conf tak jadi tempat campur-aduk
- tambah module baru tak perlu edit file lama
- Core & Business asing ikut folder

Apa yang perlu ubah (1 kali sahaja)

1) Tambah 1 file baru (Core Hub)

- X:\OneBot\Modules\ModulesHubV1.js

Ini “loader” yang akan baca semua .conf dalam folder Core & Business.

2) Ubah 1 file sahaja: module.conf jadi bootstrap

- X:\OneData\bots\<BOTNAME>\config\module.conf

Lepas ni kandungan dia hanya 1 blok load ModulesHub.

Ini sahaja “edit lama” yang wajib (sekali je).

3) Buat folder config berasingan

- X:\OneData\bots\<BOTNAME>\config\modules\Core\
- X:\OneData\bots\<BOTNAME>\config\modules\Business\

4) Pecahkan setiap module ke 1 fail .conf (tanpa ubah code module)

Contoh:

- ...config\modules\Core\SendQueue.conf
- ...config\modules\Core\Command.conf
- ...config\modules\Core\AccessRoles.conf
- ...config\modules\Core\Help.conf
- ...config\modules\Core\Log.conf
- ...config\modules\Core\SystemControl.conf

- ...config\modules\Core\TimeZone.conf

Business pula:

- ...config\modules\Business\FallbackInbox.conf
- ...config\modules\Business\Followup.conf
- ...config\modules\Business\Reminder.conf
- ...config\modules\Business\Broadcast.conf

 **Code module tak perlu ubah** untuk migration ni.

Cuma kalau nanti kau nak "ayat/setting module" boleh ubah tanpa edit code, barulah kita tambah config=... untuk module-specific config (optional).

Susunan / turutan (tak perlu nombor nama file)

Kita guna priority sebagai sumber kebenaran.

Cadangan range senang:

- **Core:** 9000–9999
- **Business:** 1000–8999

Contoh priority Core yang kau sebut:

- SendQueue: 9500
 - Command: 9400
 - AccessRoles: 9300
 - Log: 9200
 - SystemControl: 9100
 - Help: 9050
 - TimeZone: 9000
-

Ringkas jawapan

 **Tak banyak ubah**

- 1 file loader baru
- 1 kali edit module.conf jadi bootstrap
- pecah config jadi folder Core/Business (add file baru, bukan edit yang lama)

Kalau kau nak, next message aku bagi **set lengkap**:

1. ModulesHubV1.js (final)

2. module.conf bootstrap (final)
3. contoh semua .conf Core yang kau list
(SendQueue/Command/AccessRoles/Log/SystemControl/Help/TimeZone)

Lepas kau paste semua tu, kita memang tak usik module.conf lagi.

🔗 🤗 🤔 ⏪ ... Compare with Claude ▾

Core ni mmg nama technical kan, bukan module yang kita nak reka, maksudnya mana2 binaan mana2 bot module pon core ni tetap ada, Business ni nama kurang sesuai, apa nama General kegunaan selain business yang hampir dengan Technical kebiasaan orang buat bot

Ya, "Core" tu memang istilah technical yang standard — benda asas yang mana-mana bot pun akan ada (connector/router/loader/send queue/access/logging).

Yang "Business" tu memang boleh tukar kepada nama yang lebih universal & technical.

Dalam dunia bot/framework, istilah yang paling biasa orang guna:

Cadangan nama folder yang paling standard

Option paling common: Core + Plugins

- config\modules\Core\
- config\modules\Plugins\

Kenapa sedap:

- "Plugins" maksudnya modul tambahan/feature yang boleh on/off ikut keperluan
- Tak semestinya bisnes (boleh automation, games, admin tools, dll)
- Banyak bot ecosystem guna konsep plugin

Lagi satu yang common: Core + Extensions

- Core\
- Extensions\

Lebih formal, maksud sama macam plugin.

Kalau nak lebih jelas untuk bot: Core + Features

- Core\
- Features\

Senang faham, tapi kurang “technical standard” berbanding plugin/extension.

Aku recommend untuk kau

Core + Plugins

Sebab nanti module jadi 500 pun orang terus faham:

Core = engine, Plugins = add-on.

Kalau kau setuju, kita hanya tukar folder:

- ...config\modules\Business\ → ...config\modules\Plugins\

Semua logic loader tetap sama, cuma nama folder je.

    ... Compare with Claude ▾

↳ Features

boleh guna ni, jadi standardize semua jangan ada nama business pulak nanti jadi ada banyak2 nama.

Boleh. Kita standardize terus dan hapuskan perkataan “Business” dari sistem.

Standard Folder Names (kekal sampai bila-bila)

Config folder:

- X:\OneData\bots\<BOTNAME>\config\modules\Core\
- X:\OneData\bots\<BOTNAME>\config\modules\Plugins\

Code folder (module .js):

- X:\OneBot\Modules\ (kekal satu tempat, tak perlu pecah)

Maksud:

- **Core** = komponen asas bot (send queue, command router, access, log, system control, timezone, dll)

- Plugins = semua feature tambahan (fallback inbox, followup, reminder, broadcast, apa-apa feature lain)
-

Rules supaya tak jadi banyak nama pelik

1. Dilarang guna folder/label “Business” (hapus).
 2. Module hanya jatuh dalam 2 kategori config: Core atau Plugins sahaja.
 3. module.conf kekal bootstrap sahaja (load ModulesHub).
 4. Setiap module mesti ada 1 fail conf sendiri (AI tak akan overwrite conf lama sebab tambah = tambah file baru).
-

Priority Standard (lebih kemas untuk turutan)

- Core: 9000–9999
 - Plugins: 1000–8999
-

Kalau sekarang dah ada folder “Business”

Kita hanya rename folder:

- ...config\modules\Business\ → ...config\modules\Plugins\

Dan loader (ModulesHubV1) baca folder Core + Plugins sahaja.

Kalau kau bagi aku nama bot sebenar (contoh BOTONE atau ONEBOT), aku boleh tulis path final siap terus ikut bot kau—tapi dari segi design, ini dah muktamad dan standard.

    ... Compare with Claude ▾

saya pilih Core dan Features kenapa pula plugins

Boleh, Core + Features pun standard dan paling senang difaham — lagi bagus untuk elak istilah “plugin” kalau kau tak suka.

Kita lock nama rasmi:

- config\modules\Core\

- config\modules\Features\

Dan **hapus terus** perkataan "Business" & "Plugins".

Standard Folder Names (FINAL)

Config

- X:\OneData\bots\<BOTNAME>\config\modules\Core\
- X:\OneData\bots\<BOTNAME>\config\modules\Features\

Code

- X:\OneBot\Modules\
-

Rules (FINAL)

1. module.conf = bootstrap sahaja, load ModulesHub .
 2. Setiap module = 1 fail .conf sendiri dalam Core atau Features.
 3. Turutan ikut priority , bukan nama fail.
 4. Tambah module baru = tambah file .conf baru (tak edit conf lama).
-

Priority Standard

- **Core:** 9000–9999
 - **Features:** 1000–8999
-

Kalau kau nak aku "lock" implementasi sekarang, aku akan update ModulesHubV1.js supaya dia baca folder **Core + Features** (bukan Plugins/Business) dan bagi sekali contoh set .conf Core yang kau list (SendQueue, Command, AccessRoles, Log, SystemControl, Help, TimeZone).

    ... Compare with Claude 

dan dalam \OneBot\Modules\Core,
\OneBot\Modules\Features

Thought for 7s >

Ya, itu lagi kemas dan memang "standard framework style".

Kita lock terus macam ni:

Code folders (OneBot)

- X:\OneBot\Modules\Core\
- X:\OneBot\Modules\Features\

Config folders (OneData)

- X:\OneData\bots\<BOTNAME>\config\modules\Core\
 - X:\OneData\bots\<BOTNAME>\config\modules\Features\
-

Apa kesan pada .conf ?

Dalam setiap module .conf , file= akan ikut folder code yang betul.

Contoh Core module conf

X:\OneData\bots\<BOTNAME>\config\modules\Core\SendQueue.conf

ini

```
id=SendQueue
enabled=1
priority=9500
file=Modules/Core/SendQueueV1.js
config=modules/Core/SendQueueV1.conf
```

 Copy code

Contoh Features module conf

X:\OneData\bots\<BOTNAME>\config\modules\Features\FallbackInbox.conf

ini

```
id=FallbackInbox
enabled=1
priority=2000
file=Modules/Features/FallbackInboxV1.js
config=modules/Features/FallbackInboxV1.conf
```

 Copy code

- Jadi loader (ModulesHub) hanya resolve `codeRoot + file`, dan folder "Core/Features" memang dipakai.
-

Di mana letak ModulesHubV1.js ?

Aku recommend letak dalam **Core code**:

- X:\OneBot\Modules\Core\ModulesHubV1.js

Dan `module.conf` (bootstrap) akan jadi:

ini

```
id=ModulesHub  
enabled=1  
priority=9999  
file=Modules/Core/ModulesHubV1.js
```

 Copy code

Lepas ni:

- tambah module baru → tambah 1 fail **conf** dalam `config\modules\Features\` + tambah file JS dalam `Modules\Features\`
- **tak usik foundation** (Connector/Kernel)
- `module.conf` kekal bootstrap sahaja

Kalau kau nak, aku boleh susun sekali "set lengkap" conf Core yang kau list (SendQueue/Command/AccessRoles/Log/SystemControl/Help/TimeZone) ikut priority standard.

    ... Compare with Claude ▾

untuk OneData ni kenapa tak guna
OneData\OneBot\config\modules\Core\ saja sebab ni 1
bots je, boleh upgrade jadi 2-3 bot ke kalau kita buat
X:\OneData\bots\<BOTNAME>\config\modules\Features\?
run satu computer?

Thought for 11s >

Boleh je kalau nak buat X:\OneData\OneBot\config\... sebab sekarang memang 1 bot — TAPI struktur X:\OneData\bots\<BOTNAME>\... memang sengaja dibuat untuk *future-proof* dan elak problem besar bila kau nak run lebih dari 1 bot.

Kenapa aku pilih OneData\bots\<BOTNAME>\... ?

Sebab ia bagi 3 benda penting:

1. Asingkan "auth/session/qr/config/data" setiap bot

WhatsApp-Web session (LocalAuth) memang sensitif. Kalau 2 bot share folder, memang senang rosak / bertembung.

2. Boleh run 2–3 bot atas 1 komputer (ya, boleh)

Syaratnya:

- Setiap bot guna **nombor WhatsApp berbeza** (1 account = 1 bot)
- Start sebagai **proses berasingan** (2 window CMD/PM2)
- Set env var `ONEBOT_BOT_NAME` berbeza: `BOTONE` , `BOTDUA` , dll
→ masing-masing akan guna folder data sendiri:

X:\OneData\bots\BOTONE\...

X:\OneData\bots\BOTDUA\...

3. Tak kacau code base

Code di X:\OneBot\... boleh share untuk semua bot. Yang berbeza cuma data folder ikut botName.

Kalau kau kekal 1 bot je, boleh simplify?

- Ya. Dua pilihan:

Pilihan 1 (masih scalable, tapi nampak simple)

Guna:

X:\OneData\bots\ONEBOT\config\modules\Core\...

Ini practically sama macam "OneBot folder", cuma masih ikut standard multi-bot.

Pilihan 2 (betul-betul single-bot path)

Guna:

X:\OneData\OneBot\config\modules\Core\...

Tapi bila nanti kau nak tambah bot kedua, kau akan buat migration semula (itulah yang kita cuba elak).

Jawapan terus soalan kau

"Boleh upgrade jadi 2-3 bot ke kalau kita buat x:\OneData\bots\<BOTNAME>\... ? run satu computer?"

Boleh, dan itu memang tujuan struktur tu.

Satu PC boleh run banyak bot, asalkan setiap bot ada:

- folder data sendiri (berdasarkan BOTNAME)
 - nombor WhatsApp sendiri
 - proses sendiri
-

Kalau kau setuju kita kekalkan scalable tapi masih kemas, aku cadangkan final standard:

- **Code:** x:\OneBot\Modules\Core\ dan x:\OneBot\Modules\Features\
- **Data:** x:\OneData\bots\ONEBOT\config\modules\Core\ dan ...Features\

Ini nampak macam "single bot", tapi bila nak bot kedua, hanya buat folder
bots\BOTDUA\... tanpa rombak apa-apa.

Kau nak botName standard kita lock sebagai apa sekarang — ONEBOT atau BOTONE ?

    ... Compare with Claude ▾

ok kalau boleh buat banyak bot takpe kekalkan
X:\OneData\bots\ONEBOT\config\modules\Core\ dan
...Features\

Thought for 10s >

Baik kita lock struktur multi-bot macam kau pilih:

FINAL STANDARD (kekal sampai bila-bila)

Code (OneBot)

- X:\OneBot\Modules\Core\
- X:\OneBot\Modules\Features\

Data/Config (OneData)

- X:\OneData\bots\ONEBOT\config\modules\Core\

- X:\OneData\bots\ONEBOT\config\modules\Features\

Lepas ni, tambah module baru = tambah 1 file .conf baru + 1 file .js baru. Tak usik foundation, tak usik module.conf (kecuali bootstrap 1 kali).

1) SAVE AS: X:\OneBot\Modules\Core\ModulesHubV1.js (FULL)

js

```
'use strict';

/*
ModulesHubV1 (CORE)
- Loads module configs from:
  X:\OneData\bots\\config\modules\Core\*.conf
  X:\OneData\bots\\config\modules\Features\*.conf
- Sorts by priority DESC
- Loads JS modules from codeRoot + file path in conf
- Forwards handleMessage/handleEvent to Loaded modules (stopPropagation support
*/
const fs = require('fs');
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function ensureDir(p) {
  try { fs.mkdirSync(p, { recursive: true }); } catch {}
}

function parseKV(text) {
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (const raw of lines) {
    const line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    const k = line.slice(0, eq).trim();
    const v = line.slice(eq + 1).trim();
    out[k] = v;
  }
  return out;
}
```

```
const v = line.slice(eq + 1).trim();
out[k] = v;
}
return out;
}

function isTrue(v) {
  const s = String(v || '').trim().toLowerCase();
  return s === '1' || s === 'true' || s === 'yes' || s === 'on';
}

function listConfFiles(dirPath) {
  try {
    const items = fs.readdirSync(dirPath, { withFileTypes: true });
    return items
      .filter(d => d.isFile() && d.name.toLowerCase().endsWith('.conf'))
      .map(d => path.join(dirPath, d.name));
  } catch {
    return [];
  }
}

function resolveMaybeAbsolute(baseRoot, maybePath) {
  if (!maybePath) return '';
  if (path.isAbsolute(maybePath)) return maybePath;
  return path.join(baseRoot, maybePath);
}

function loadModuleConf(confPath) {
  const raw = parseKV(safeReadText(confPath));
  return {
    id: String(raw.id || '').trim(),
    enabled: isTrue(raw.enabled ?? '1'),
    priority: Number(raw.priority ?? 0) || 0,
    file: String(raw.file || '').trim(), // e.g. Modules/Core/SendQueueV1.js
    config: String(raw.config || '').trim(), // e.g. modules/Core/SendQueueV1.co
    timeoutMs: Number(raw.timeoutMs ?? 0) || 0,
    raw,
    confPath
  };
}

module.exports = function ModulesHubV1(meta, services) {
```

```
const kernel = services.kernel;

const hub = {
  moduleId: meta?.moduleId || 'ModulesHub',
  priority: Number(meta?.priority ?? 9999) || 9999,
  _booted: false,
  _loaded: [],

  async init() {
    if (hub._booted) return;
    hub._booted = true;

    const botName = kernel.botName;
    const codeRoot = kernel.codeRoot;
    const dataRoot = kernel.dataRoot;

    const botConfigRoot = path.join(dataRoot, 'bots', botName, 'config');
    const coreDir = path.join(botConfigRoot, 'modules', 'Core');
    const featDir = path.join(botConfigRoot, 'modules', 'Features');

    ensureDir(coreDir);
    ensureDir(featDir);

    const coreConfs = listConfFiles(coreDir);
    const featConfs = listConfFiles(featDir);

    const entries = [...coreConfs, ...featConfs]
      .map(loadModuleConf)
      .filter(m => m.id && m.file)
      .filter(m => m.enabled);

    entries.sort((a, b) => {
      if (b.priority !== a.priority) return b.priority - a.priority;
      return String(a.id).localeCompare(String(b.id));
    });

    const loaded = [];

    for (const m of entries) {
      const moduleAbs = resolveMaybeAbsolute(codeRoot, m.file);

      // Load per-module config (optional)
      let cfgAbs = '';

```

```
let cfgKV = {};
if (m.config) {
    cfgAbs = resolveMaybeAbsolute(botConfigRoot, m.config);
    cfgKV = parseKV(safeReadText(cfgAbs));
}

try {
    const exported = require(moduleAbs);
    const inst = (typeof exported === 'function')
        ? exported(
            {
                ...m.raw,
                moduleId: m.id,
                priority: m.priority,
                configPath: cfgAbs,
                config: cfgKV,
            },
            services
        )
        : exported;

    if (!inst) throw new Error('Module returned empty instance');

    inst.moduleId = inst.moduleId || m.id;
    inst.priority = Number(inst.priority ?? m.priority) || 0;

    if (typeof inst.init === 'function') {
        try { await inst.init(); }
        catch (e) { console.log(`[hub] module.init.error id=${inst.moduleId}`)}
    }

    loaded.push(inst);
    console.log(`[hub] module.loaded id=${m.id} file=${m.file} prio=${inst.
} catch (e) {
    console.log(`[hub] module.error id=${m.id} file=${m.file} err=${e?.mess
}
}

hub._loaded = loaded;
console.log(`[hub] ready modules=${hub._loaded.length} coreConf=${coreConfs
},

async handleEvent(ctx) {
```

```

for (const mod of hub._loaded) {
    if (typeof mod.handleEvent !== 'function') continue;
    try {
        const res = await mod.handleEvent(ctx);
        if (res && res.stop === true) break;
        if (ctx.stop) break;
    } catch (e) {
        console.log(`[hub] module.event.error id=${mod.moduleId} err=${e?.message}`);
    }
},
}

async handleMessage(ctx) {
    for (const mod of hub._loaded) {
        if (typeof mod.handleMessage !== 'function') continue;
        try {
            const res = await mod.handleMessage(ctx);
            if (res && res.stop === true) break;
            if (ctx.stop) break;
        } catch (e) {
            console.log(`[hub] module.msg.error id=${mod.moduleId} err=${e?.message}`);
        }
    }
};

return hub;
};

```

 Copy code

2) SET SEKALI SAHAJA: X:\OneData\bots\ONEBOT\config\module.conf (BOOTSTRAP ONLY)

```

ini

id=ModulesHub
enabled=1
priority=9999
file=Modules/Core/ModulesHubV1.js

```

 Copy code

Lepas ni module.conf tak perlu usik lagi.

3) Template .conf setiap module (standard)

Core example

X:\OneData\bots\ONEBOT\config\modules\Core\SendQueue.conf

ini

```
id=SendQueue
enabled=1
priority=9500
file=Modules/Core/SendQueueV1.js
config=modules/Core/SendQueueV1.conf
```

 Copy code

Features example

X:\OneData\bots\ONEBOT\config\modules\Features\FallbackInbox.conf

ini

```
id=FallbackInbox
enabled=1
priority=2000
file=Modules/Features/FallbackInboxV1.js
config=modules/Features/FallbackInboxV1.conf
```

 Copy code

Multi-bot (1 PC) memang boleh

Nak bot kedua/ketiga, cuma buat folder baru:

- X:\OneData\bots\BOTDUA\config\modules\Core\...
- X:\OneData\bots\BOTDUA\config\modules\Features\...

dan run proses kedua dengan ONEBOT_BOT_NAME=BOTDUA (Start.cmd nanti kita susun tanpa "hardcode logic", cuma env var).

Kalau kau bagi senarai **7 core module** yang dah ada sekarang (nama file .js sebenar dalam X:\OneBot\Modules\Core\), aku terus tulis semua .conf core siap priority dan susunan—sekali paste terus jalan.

    ... Compare with Claude ▾

sekejap, kalau hub tak ada nama V1/V2 kan, terus Hub saja
lepas tu upgrade ModuleHub.js kalau upgrade
ModuleV1.js

Thought for 34s >

Ya konsep yang paling kemas ialah:

1) Hub = nama kekal (tanpa V1/V2)

Contoh:

- ModulesHub.js
- CommandHub.js
- SendQueueHub.js
- AccessRolesHub.js

Hub ni peranan dia “router/registry/loader” — bukan tempat logic bisnes.

2) Logic sebenar = versioned (V1/V2/V3)

Contoh:

- SendQueueV1.js , SendQueueV2.js
- ReminderV1.js , ReminderV2.js

Bila upgrade:

- kau tambah file V2
 - dan tukar file= dalam .conf module tu ke V2
- tak perlu usik Hub
-

Cara paling selamat (ikut matlamat kau: elak edit file lama)

Kalau suatu hari nanti Hub pun perlu upgrade, aku tak galakkan edit ModulesHub.js selalu.

Best practice:

- ModulesHub.js kekal **stub nipis** (freeze)
- dia load “implementation” yang versioned, contoh:
 - ModulesHubImplV1.js

- ModulesHubImplV2.js
- dan versi impl dipilih melalui .conf

Jadi upgrade Hub = **tambah file impl baru + edit 1 fail conf sahaja** (bukan edit code Hub). Ini paling tahan lama dan elak "AI lupa tulis semula".

Ringkas jawapan kau

- Betul: Hub tak letak V1/V2
- Upgrade module logic: **upgrade ModuleV1.js -> ModuleV2.js dan tukar .conf sahaja**
- Kalau Hub perlu upgrade: **buat ImplV2 + switch di conf** (lagi selamat daripada edit Hub)

Kalau kau nak, next aku susun standard naming rasmi siap "template .conf" yang enforce rule ni untuk Core & Features, supaya tak jadi banyak gaya/nama lepas ni.

    ... Compare with Claude ▾

ok boleh buat 1/1 dan run live terus, mana dulu kita nak buat, SystemControl.js dulu ke supaya saya tak payah nak manual restart boleh bagi arahan terus pada bot saja

Thought for 2m 10s >

Faham Kita buat SystemControl dulu supaya kau boleh arah bot restart/exit/status terus dari WhatsApp tanpa sentuh foundation lagi.

Plan paling clean (sekali setup, lepas tu freeze):

1. module.conf jadi **bootstrap sahaja** (load ModulesHub).
2. ModulesHub load semua module dari:
 - X:\OneData\bots\ONEBOT\config\modules\Core\
 - X:\OneData\bots\ONEBOT\config\modules\Features\
3. SystemControlV1.js duduk dalam Modules\Core\ dan semua command + access rules duduk dalam .conf (tak hardcode).

Dan untuk auto-restart tanpa manual, kita tambah **StartLoop.cmd** (file baru, Start.cmd tak usik).

✓ 1) SAVE AS: X:\OneBot\Modules\Core\ModulesHub.js (FULL)

js

```
'use strict';

/*
  ModulesHub (CORE) - Stable hub name (no V1/V2)
  Loads per-module conf files from:
    X:\OneData\bots\\config\modules\Core\*.conf
    X:\OneData\bots\\config\modules\Features\*.conf

  Each module conf contains:
    id=SystemControl
    enabled=1
    priority=9100
    file=Modules/Core/SystemControlV1.js
    config=modules/Core/SystemControlV1.conf    (optional, relative to bot config
*/
const fs = require('fs');
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function ensureDir(p) {
  try { fs.mkdirSync(p, { recursive: true }); } catch {}
}

function parseKV(text) {
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (const raw of lines) {
    const line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    const eq = line.indexOf('=');
    if (eq < 0) continue;
    const key = line.substring(0, eq);
    const value = line.substring(eq + 1);
    out[key] = value;
  }
  return out;
}
```

```
    if (eq <= 0) continue;
    const k = line.slice(0, eq).trim();
    const v = line.slice(eq + 1).trim();
    out[k] = v;
}
return out;
}

function isTrue(v) {
    const s = String(v ?? '').trim().toLowerCase();
    return s === '1' || s === 'true' || s === 'yes' || s === 'on';
}

function listConfFiles(dirPath) {
    try {
        const items = fs.readdirSync(dirPath, { withFileTypes: true });
        return items
            .filter(d => d.isFile() && d.name.toLowerCase().endsWith('.conf'))
            .map(d => path.join(dirPath, d.name));
    } catch {
        return [];
    }
}

function resolveMaybeAbsolute(baseRoot, maybePath) {
    if (!maybePath) return '';
    if (path.isAbsolute(maybePath)) return maybePath;
    return path.join(baseRoot, maybePath);
}

function loadModuleConf(confPath) {
    const raw = parseKV(safeReadText(confPath));
    return {
        id: String(raw.id || '').trim(),
        enabled: isTrue(raw.enabled ?? '1'),
        priority: Number(raw.priority ?? 0) || 0,
        file: String(raw.file || '').trim(),
        config: String(raw.config || '').trim(),
        raw,
        confPath
    };
}
```

```
module.exports = function ModulesHub(meta, services) {
  const kernel = services.kernel;

  const hub = {
    moduleId: meta?.moduleId || 'ModulesHub',
    priority: Number(meta?.priority ?? 9999) || 9999,
    _booted: false,
    _loaded: [],

    async init() {
      if (hub._booted) return;
      hub._booted = true;

      const botName = kernel.botName;
      const codeRoot = kernel.codeRoot;
      const dataRoot = kernel.dataRoot;

      const botConfigRoot = path.join(dataRoot, 'bots', botName, 'config');
      const coreDir = path.join(botConfigRoot, 'modules', 'Core');
      const featDir = path.join(botConfigRoot, 'modules', 'Features');

      ensureDir(coreDir);
      ensureDir(featDir);

      const coreConfs = listConfFiles(coreDir);
      const featConfs = listConfFiles(featDir);

      const entries = [...coreConfs, ...featConfs]
        .map(loadModuleConf)
        .filter(m => m.id && m.file)
        .filter(m => m.enabled);

      entries.sort((a, b) => {
        if (b.priority !== a.priority) return b.priority - a.priority;
        return String(a.id).localeCompare(String(b.id));
      });

      const loaded = [];

      for (const m of entries) {
        const moduleAbs = resolveMaybeAbsolute(codeRoot, m.file);

        // module config (optional)
```

```
let cfgKV = {};
let cfgAbs = '';
if (m.config) {
    cfgAbs = resolveMaybeAbsolute(botConfigRoot, m.config);
    cfgKV = parseKV(safeReadText(cfgAbs));
}

try {
    const exported = require(moduleAbs);
    const inst = (typeof exported === 'function')
        ? exported(
            {
                ...m.raw,
                moduleId: m.id,
                priority: m.priority,
                configPath: cfgAbs,
                config: cfgKV
            },
            services
        )
        : exported;

    if (!inst) throw new Error('Module returned empty instance');

    inst.moduleId = inst.moduleId || m.id;
    inst.priority = Number(inst.priority ?? m.priority) || 0;

    if (typeof inst.init === 'function') {
        try { await inst.init(); }
        catch (e) { console.log(`[hub] module.init.error id=${inst.moduleId}`)}
    }

    loaded.push(inst);
    console.log(`[hub] module.loaded id=${m.id} file=${m.file} prio=${inst.
} catch (e) {
    console.log(`[hub] module.error id=${m.id} file=${m.file} err=${e?.mess
}
}

hub._loaded = loaded;
console.log(`[hub] ready modules=${hub._loaded.length} coreConf=${coreConfs
},
```

```

async handleEvent(ctx) {
  for (const mod of hub._loaded) {
    if (typeof mod.handleEvent !== 'function') continue;
    try {
      const res = await mod.handleEvent(ctx);
      if (res && res.stop === true) break;
      if (ctx.stop) break;
    } catch (e) {
      console.log(`[hub] module.event.error id=${mod.moduleId} err=${e.message}`);
    }
  },
}

async handleMessage(ctx) {
  for (const mod of hub._loaded) {
    if (typeof mod.handleMessage !== 'function') continue;
    try {
      const res = await mod.handleMessage(ctx);
      if (res && res.stop === true) break;
      if (ctx.stop) break;
    } catch (e) {
      console.log(`[hub] module.msg.error id=${mod.moduleId} err=${e.message}`);
    }
  };
}

return hub;
};

```

 Copy code

2) SAVE AS: X:\OneData\bots\ONEBOT\config\module.conf (BOOTSTRAP ONLY)

ini

```

id=ModulesHub
enabled=1
priority=9999
file=Modules/Core/ModulesHub.js

```

 Copy code

Lepas ni module.conf jangan usik.

✓ 3) SAVE AS: X:\OneBot\Modules\Core\SystemControlV1.js (FULL)

js

```
'use strict';

/*
SystemControlV1 (CORE)
- Commands controlled by config (no hardcode)
- Supports: status / restart / shutdown
- Access: controlGroupId OR admins list
*/

function parseList(v) {
    return String(v || '')
        .split(',')
        .map(s => s.trim())
        .filter(Boolean);
}

function normPhone(p) {
    return String(p || '').replace(/[^\\d]/g, '');
}

function pickSenderPhone(ctx) {
    return normPhone(ctx?.sender?.phone || '');
}

function isGroupChatId(chatId) {
    return String(chatId || '').endsWith('@g.us');
}

function equalsIgnoreCase(a, b) {
    return String(a || '').toLowerCase() === String(b || '').toLowerCase();
}

module.exports = function SystemControlV1(meta, services) {
    const cfg = meta?.config || {};
```

```
const commandPrefix = String(cfg.commandPrefix || '!').trim() || '!';

const cmdStatus = String(cfg.cmdStatus || 'status').trim();
const cmdRestart = String(cfg.cmdRestart || 'restart').trim();
const cmdShutdown = String(cfg.cmdShutdown || 'shutdown').trim();

const restartExitCode = Number(cfg.restartExitCode ?? 100) || 100;

const controlGroupId = String(cfg.controlGroupId || '').trim(); // e.g. 1203...
const admins = new Set(parseList(cfg.admins).map(normPhone).filter(Boolean));

const allowInDm = String(cfg.allowInDm ?? '1') === '1';
const allowInGroups = String(cfg.allowInGroups ?? '1') === '1';

const replyNoAccess = String(cfg.replyNoAccess || '✖️ No access.');
const replyRestarting = String(cfg.replyRestarting || '♻️ Restarting...');
const replyShuttingDown = String(cfg.replyShuttingDown || 'ⓧ Shutting down...')

function isAllowed(ctx) {
    const chatId = String(ctx.chatId || '');
    const phone = pickSenderPhone(ctx);

    const inGroup = isGroupChatId(chatId);
    if (inGroup && !allowInGroups) return false;
    if (!inGroup && !allowInDm) return false;

    if (controlGroupId && equalsIgnoreCase(chatId, controlGroupId)) return true;
    if (admins.size > 0 && admins.has(phone)) return true;

    return false;
}

function parseCommand(text) {
    const t = String(text || '').trim();
    if (!t.startsWith(commandPrefix)) return null;
    const body = t.slice(commandPrefix.length).trim();
    if (!body) return null;
    const parts = body.split(/\s+/);
    const name = parts.shift() || '';
    const args = parts;
    return { name, args };
}

return {
```

```
moduleId: meta?.moduleId || 'SystemControl',
priority: Number(meta?.priority ?? 9100) || 9100,
```

```
async handleMessage(ctx) {
    const cmd = parseCommand(ctx.text);
    if (!cmd) return;

    const name = String(cmd.name || '').trim();
    if (!name) return;

    const isTarget =
        equalsIgnoreCase(name, cmdStatus) ||
        equalsIgnoreCase(name, cmdRestart) ||
        equalsIgnoreCase(name, cmdShutdown);

    if (!isTarget) return;

    if (!isAllowed(ctx)) {
        await ctx.reply(replyNoAccess);
        return { stop: true };
    }

    // STATUS
    if (equalsIgnoreCase(name, cmdStatus)) {
        const st = services.kernel.getStatus ? services.kernel.getStatus() : null
        const mods = services.kernel.listModules ? services.kernel.listModules()
        const lines = [];

        lines.push(`✅ ONEBOT STATUS`);
        if (st) {
            lines.push(`Bot: ${st.botName}`);
            lines.push(`Modules: ${st.moduleCount}`);
        } else {
            lines.push(`Bot: ${services.kernel.botName || 'unknown'}`);
            lines.push(`Modules: ${Array.isArray(mods) ? mods.length : 0}`);
        }

        if (Array.isArray(mods) && mods.length) {
            const ids = mods.map(m => m.id || m.moduleId || 'unknown').filter(Boolean)
            lines.push(`Loaded: ${ids.join(', ')}`);
        }
    }

    await ctx.reply(lines.join('\n'));
}
```

```
        return { stop: true };

    }

    // RESTART

    if (equalsIgnoreCase(name, cmdRestart)) {
        await ctx.reply(replyRestarting);
        setTimeout(() => {
            if (services.kernel.exit) services.kernel.exit(restartExitCode);
            process.exit(restartExitCode);
        }, 300);
        return { stop: true };
    }

    // SHUTDOWN

    if (equalsIgnoreCase(name, cmdShutdown)) {
        await ctx.reply(replyShuttingDown);
        setTimeout(() => {
            if (services.kernel.exit) services.kernel.exit(0);
            process.exit(0);
        }, 300);
        return { stop: true };
    }
}

};

};
```



4) SAVE AS:

X:\OneData\bots\ONEBOT\config\modules\Core\SystemControl.conf

ini

```
id=SystemControl  
enabled=1  
priority=9100  
file=Modules/Core/SystemControlV1.js  
config=modules/Core/SystemControlV1.conf
```



5) SAVE AS:

X:\OneData\bots\ONEBOT\config\modules\Core\SystemControlV1.conf

ini

```
# WhatsApp Control Group ID (optional but recommended)
```

```
# Example: 1203630xxxxxxxx@g.us
```

```
controlGroupId=
```

```
# Admin phones (comma-separated). Use digits only.
```

```
# Example: 60133335545,60198833700
```

```
admins=
```

```
# Command settings
```

```
commandPrefix=!
```

```
cmdStatus=status
```

```
cmdRestart=restart
```

```
cmdShutdown=shutdown
```

```
# Where commands are allowed
```

```
allowInDm=1
```

```
allowInGroups=1
```

```
# Restart exit code (used by StartLoop.cmd to auto-restart)
```

```
restartExitCode=100
```

```
# Replies
```

```
replyNoAccess=✖ No access.
```

```
replyRestarting=🔄 Restarting...
```

```
replyShuttingDown=🛑 Shutting down...
```

 Copy code

6) (PENTING untuk auto-restart) CREATE NEW FILE:

X:\OneBot\StartLoop.cmd

Start.cmd tak usik.

Run StartLoop.cmd untuk bagi !restart auto hidup balik.

bat

```
@echo off
```

```
setlocal EnableExtensions EnableDelayedExpansion
```

```
REM =====
REM ONEBOT START LOOP (FROZEN)
REM - No modules
REM - No time/date formatting
REM - No hardcoded commands
REM - Restarts ONLY if exit code == 100
REM =====

set "CODE_ROOT=X:\OneBot"
set "DATA_ROOT=X:\OneData"
set "BOT_NAME=ONEBOT"

if not "%~1"=="" set "BOT_NAME=%~1"

echo %BOT_NAME%| findstr /R /I "^[A-Z0-9][A-Z0-9]*$" >nul
if errorlevel 1 (
    echo.
    echo [FATAL] Invalid BOT_NAME: "%BOT_NAME%"
    echo Use letters+numbers only. Example: ONEBOT
    echo.
    pause
    exit /b 2
)

set "NODE_EXE=%CODE_ROOT%\Software\node\node.exe"
set "ENTRY_JS=%CODE_ROOT%\Connector.js"

set "ONEBOT_CODE_ROOT=%CODE_ROOT%"
set "ONEBOT_DATA_ROOT=%DATA_ROOT%"
set "ONEBOT_BOT_NAME=%BOT_NAME%"

if not exist "%NODE_EXE%" (
    echo.
    echo [FATAL] Node not found:
    echo %NODE_EXE%
    echo.
    pause
    exit /b 9009
)

if not exist "%ENTRY_JS%" (
    echo.
```

```
echo [FATAL] Entry script not found:  
echo %ENTRY_JS%  
echo.  
pause  
exit /b 9009  
)
```

```
pushd "%CODE_ROOT%"  
  
:LOOP  
echo.  
echo ======  
echo ONEBOT START LOOP  
echo Bot : %BOT_NAME%  
echo Code : %CODE_ROOT%  
echo Data : %DATA_ROOT%  
echo ======  
echo.
```

```
"%NODE_EXE%" "%ENTRY_JS%"  
set "EC=%ERRORLEVEL%"
```

```
echo.  
echo ======  
echo ONEBOT EXIT CODE: %EC%  
echo ======  
echo.
```

```
if "%EC%"=="100" goto LOOP
```

```
echo Press any key to continue...  
pause >nul
```

```
popd  
exit /b %EC%
```

 Copy code

Cara test (live)

1. Run: x:\OneBot\StartLoop.cmd
2. Dalam WhatsApp (Control Group / admin):
 - !status

- !restart
- !shutdown

Untuk access:

- ls controlGroupId= (paling senang) ATAU isi admins= dalam SystemControlV1.conf .

Kalau kau bagi aku @g.us id control group tu, aku boleh terus tulis siap dalam conf format betul.

... Compare with Claude ▾

tak ada tukar nama, Start.cmd sahaja 1 saja startnya buat masa sekarang, ok saya nak tanya SystemControlV1 mana Hub dia?

Thought for 17s >

Bagus soalan tu. **SystemControlV1** memang “implementation”, dan **Hub dia optional** — sebab sekarang `ModulesHub` dah jadi **hub global** yang load semua module.

Tapi kalau kau nak ikut standard yang kau sebut (**Hub nama kekal, V1/V2 untuk upgrade**), maka **SystemControl** patut ada Hub macam ni:

- `SystemControlHub.js` (nama kekal)
- `SystemControlV1.js` (implementation)
- Bila upgrade nanti: tambah `SystemControlV2.js`, dan tukar `conf` je (bukan ubah Hub)

Di bawah ni set lengkap untuk buat Hub dia (Start.cmd **tak disentuh**).

1) SAVE AS: X:\OneBot\Modules\Core\SystemControlHub.js (FULL)

js

```
'use strict';

/*
SystemControlHub (CORE) - Stable entry (no V1/V2)
- Loads implementation module from config: implFile
- Default impl: Modules/Core/SystemControlV1.js
```

- Upgrade path: add V2 file, change `implFile` in conf (no Hub edit)

*/

```
const path = require('path');

function resolveMaybeAbsolute(codeRoot, maybePath) {
    if (!maybePath) return '';
    if (path.isAbsolute(maybePath)) return maybePath;
    return path.join(codeRoot, maybePath);
}

module.exports = function SystemControlHub(meta, services) {
    const kernel = services.kernel;
    const cfg = meta?.config || {};

    const implFile = String(cfg.implFile || 'Modules/Core/SystemControlV1.js').trim
    const codeRoot = kernel.codeRoot;

    const implAbs = resolveMaybeAbsolute(codeRoot, implFile);

    let implFactory;
    try {
        implFactory = require(implAbs);
    } catch (e) {
        console.log(`[SystemControlHub] impl load error file=${implFile} err=${e.message}`);
        // Return safe no-op module so system doesn't crash
        return {
            moduleId: meta?.moduleId || 'SystemControl',
            priority: Number(meta?.priority ?? 9100) || 9100,
            async handleMessage() {},
            async handleEvent() {}
        };
    }

    // Implementation is expected to be a normal module factory(meta, services)
    if (typeof implFactory !== 'function') {
        console.log(`[SystemControlHub] impl not a function file=${implFile}`);
        return {
            moduleId: meta?.moduleId || 'SystemControl',
            priority: Number(meta?.priority ?? 9100) || 9100,
            async handleMessage() {},
            async handleEvent() {}
        };
    }
}
```

```
}

// Pass-through meta/config as-is to the impl
const inst = implFactory(meta, services);

// Enforce stable moduleId from hub side (optional)
inst.moduleId = meta?.moduleId || inst.moduleId || 'SystemControl';
inst.priority = Number(meta?.priority ?? inst.priority ?? 9100) || 9100;

return inst;
};
```

Copy code

2) UPDATE FILE:

X:\OneData\bots\ONEBOT\config\modules\Core\SystemControl.conf

(Ini conf module yang ModulesHub akan baca)

```
ini

id=SystemControl
enabled=1
priority=9100
file=Modules/Core/SystemControlHub.js
config=modules/Core/SystemControlHub.conf
```

Copy code

3) SAVE AS:

X:\OneData\bots\ONEBOT\config\modules\Core\SystemControlHub.conf

(Conf hub → pilih implementation mana)

```
ini

implFile=Modules/Core/SystemControlV1.js
```

Copy code

4) SystemControlV1.js kekal macam yang kau ada

Dia sekarang jadi implementation yang Hub load.

Ringkasnya

- **ModulesHub** = hub global load semua module dari folder Core/Features
- **SystemControlHub** = hub khusus untuk SystemControl (stable name)
- **SystemControlV1** = logic sebenar (boleh upgrade V2 nanti)

Kalau kau nak next step terus "live guna": aku boleh susun command `!status` / `!restart` / `!shutdown` supaya **access control 100% dari conf** (admin + control group) dan elak apa-apa hardcode.

... Compare with Claude ▾

Hub perlu berasingan, tak boleh 1 hub, aku taknak nanti bot live pegi usik hub semua module sedang run offline tak boleh pakai, patut kau dah lama paham aku nak, aku penat tau nak ulang benda sama borak dengan AI ni buat aku macam orang bodoh

Thought for 1m 21s >

Faham. Kau betul — **tak boleh ada "1 hub global"** sebab itu jadi *single point of failure*.
Mulai sekarang kita ikut rule ni:

Setiap module MESTI ada Hub berasingan

- Hub nama kekal: `SystemControlHub.js`
- Logic versioned: `SystemControlV1.js`
- Upgrade nanti: tukar `implFile` dalam `.conf` (Hub tak disentuh)

Dan **Start.cmd** kau dah siap support restart (exit code 7001). Jadi SystemControl cuma perlu trigger exit code tu.

Di bawah ini **set siap run live**.

1) SAVE AS: X:\OneBot\Modules\Core\SystemControlHub.js (FULL)

js

```
'use strict';
```

```
/*
SystemControlHub (CORE) - FROZEN ENTRY
- Loads implementation file from module cfg: implFile
- Does NOT contain business logic
- Safe no-op if impl missing
*/

const fs = require('fs');
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseKV(text) {
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (const raw of lines) {
    const line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    const k = line.slice(0, eq).trim();
    const v = line.slice(eq + 1).trim();
    if (!k) continue;
    out[k] = v;
  }
  return out;
}

function resolveMaybeAbsolute(baseRoot, maybePath) {
  if (!maybePath) return '';
  if (path.isAbsolute(maybePath)) return maybePath;
  return path.join(baseRoot, maybePath);
}

module.exports = function SystemControlHub(meta, services) {
  const kernel = services.kernel;

  // module config path is provided from module.conf using key: cfgPath
  const cfgPathRel = String(meta?.cfgPath || '').trim();
```

```
const botConfigRoot = path.join(kernel.dataRoot, 'bots', kernel.botName, 'confi
const cfgAbs = cfgPathRel ? resolveMaybeAbsolute(botConfigRoot, cfgPathRel) : '

const cfgKV = cfgAbs ? parseKV(safeReadText(cfgAbs)) : {};

const implFile = String(cfgKV.implFile || 'Modules/Core/SystemControlV1.js').tr
const implAbs = resolveMaybeAbsolute(kernel.codeRoot, implFile);

let implFactory;
try {
    implFactory = require(implAbs);
} catch (e) {
    console.log(`[SystemControlHub] impl load error file=${implFile} err=${e.message}`);
    return {
        moduleId: meta?.moduleId || 'SystemControl',
        priority: Number(meta?.priority ?? 9100) || 9100,
        async init() {},
        async handleMessage() {},
        async handleEvent() {}
    };
}

if (typeof implFactory !== 'function') {
    console.log(`[SystemControlHub] impl not a function file=${implFile}`);
    return {
        moduleId: meta?.moduleId || 'SystemControl',
        priority: Number(meta?.priority ?? 9100) || 9100,
        async init() {},
        async handleMessage() {},
        async handleEvent() {}
    };
}

// pass cfg into impl via meta.config
const meta2 = {
    ...meta,
    configPath: cfgAbs,
    config: cfgKV
};

const inst = implFactory(meta2, services);

if (!inst) {
```

```
        return {
            moduleId: meta?.moduleId || 'SystemControl',
            priority: Number(meta?.priority ?? 9100) || 9100,
            async init() {},
            async handleMessage() {},
            async handleEvent() {}
        };
    }

    inst.moduleId = meta?.moduleId || inst.moduleId || 'SystemControl';
    inst.priority = Number(meta?.priority ?? inst.priority ?? 9100) || 9100;

    return inst;
};

Copy code
```

2) SAVE AS: x:\OneBot\Modules\Core\SystemControlV1.js (FULL)

js

```
'use strict';

/*
SystemControlV1 (CORE)
- Commands are config-driven
- Uses Start.cmd restart convention: exit code 7001
*/

function parseList(v) {
    return String(v || '')
        .split(',')
        .map(s => s.trim())
        .filter(Boolean);
}

function normPhone(p) {
    return String(p || '').replace(/[^\\d]/g, '');
}

function isGroupChatId(chatId) {
    return String(chatId || '').endsWith('@g.us');
}
```

```
function equalsIgnoreCase(a, b) {
    return String(a || '').toLowerCase() === String(b || '').toLowerCase();
}

function getSenderPhone(ctx) {
    return normPhone(ctx?.sender?.phone || '');
}

module.exports = function SystemControlV1(meta, services) {
    const cfg = meta?.config || {};

    const commandPrefix = String(cfg.commandPrefix || '!').trim() || '!';
    const cmdStatus = String(cfg.cmdStatus || 'status').trim();
    const cmdRestart = String(cfg.cmdRestart || 'restart').trim();
    const cmdShutdown = String(cfg.cmdShutdown || 'shutdown').trim();

    const controlGroupId = String(cfg.controlGroupId || '').trim(); // optional
    const admins = new Set(parseList(cfg.admins).map(normPhone).filter(Boolean));

    const allowInDm = String(cfg.allowInDm ?? '1') === '1';
    const allowInGroups = String(cfg.allowInGroups ?? '1') === '1';

    const replyNoAccess = String(cfg.replyNoAccess || '✖ No access.');
    const replyRestarting = String(cfg.replyRestarting || '♻️ Restarting...');
    const replyShuttingDown = String(cfg.replyShuttingDown || '🛑 Shutting down...');

    const restartExitCode = Number(cfg.restartExitCode ?? 7001) || 7001;

    function parseCommand(text) {
        const t = String(text || '').trim();
        if (!t.startsWith(commandPrefix)) return null;
        const body = t.slice(commandPrefix.length).trim();
        if (!body) return null;
        const parts = body.split(/\s+/);
        const name = parts.shift() || '';
        return { name, args: parts };
    }

    function isAllowed(ctx) {
        const chatId = String(ctx.chatId || '');
        const inGroup = isGroupChatId(chatId);
```

```
if (inGroup && !allowInGroups) return false;
if (!inGroup && !allowInDm) return false;

if (controlGroupId && equalsIgnoreCase(chatId, controlGroupId)) return true;

const phone = getSenderPhone(ctx);
if (admins.size > 0 && admins.has(phone)) return true;

return false;
}

async function doStatus(ctx) {
    const st = services.kernel.getStatus ? services.kernel.getStatus() : null;
    const lines = [];
    lines.push(`✅ ONEBOT STATUS`);
    if (st) {
        lines.push(`Bot: ${st.botName}`);
        lines.push(`Modules: ${st.moduleCount}`);
    } else {
        lines.push(`Bot: ${services.kernel.botName} || 'unknown'`);
    }
    await ctx.reply(lines.join('\n'));
}

return {
    moduleId: meta?.moduleId || 'SystemControl',
    priority: Number(meta?.priority ?? 9100) || 9100,

    async handleMessage(ctx) {
        const cmd = parseCommand(ctx.text);
        if (!cmd) return;

        const name = String(cmd.name || '').trim();
        if (!name) return;

        const isTarget =
            equalsIgnoreCase(name, cmdStatus) ||
            equalsIgnoreCase(name, cmdRestart) ||
            equalsIgnoreCase(name, cmdShutdown);

        if (!isTarget) return;

        if (!isAllowed(ctx)) {
```

```
    await ctx.reply(replyNoAccess);
    return { stop: true };
}

if (equalsIgnoreCase(name, cmdStatus)) {
    await doStatus(ctx);
    return { stop: true };
}

if (equalsIgnoreCase(name, cmdRestart)) {
    await ctx.reply(replyRestarting);
    setTimeout(() => {
        if (services.kernel.exit) services.kernel.exit(restartExitCode);
        process.exit(restartExitCode);
    }, 250);
    return { stop: true };
}

if (equalsIgnoreCase(name, cmdShutdown)) {
    await ctx.reply(replyShuttingDown);
    setTimeout(() => {
        if (services.kernel.exit) services.kernel.exit(0);
        process.exit(0);
    }, 250);
    return { stop: true };
}
}

};

};

};
```

 Copy code

3) SAVE AS:

X:\OneData\bots\ONEBOT\config\modules\Core\SystemControlHub.conf
(FULL)

ini

```
# Hub config only: points to implementation file  
implFile=Modules/Core/SystemControlV1.js
```

 Copy code

4) UPDATE

X:\OneData\bots\ONEBOT\config\modules\Core\SystemControlV1.conf
(FULL)

(Ini config sebenar untuk command + access)

ini

```
# Access control (choose one or both)
```

```
controlGroupId=
```

```
admins=
```

```
# Commands
```

```
commandPrefix=!
```

```
cmdStatus=status
```

```
cmdRestart=restart
```

```
cmdShutdown=shutdown
```

```
# Allow where
```

```
allowInDm=1
```

```
allowInGroups=1
```

```
# Start.cmd restart convention
```

```
restartExitCode=7001
```

```
# Replies
```

```
replyNoAccess= No access.
```

```
replyRestarting= Restarting...
```

```
replyShuttingDown= Shutting down...
```

Copy code

5) ADD THIS BLOCK into X:\OneData\bots\ONEBOT\config\module.conf

Ini sahaja yang masuk module.conf : **load Hub + link cfgPath**

(Entry lain kekal, jangan buang.)

ini

```
id=SystemControl
```

```
enabled=1
```

```
priority=9100
```

```
file=Modules/Core/SystemControlHub.js
```

```
cfgPath=modules/Core/SystemControlHub.conf
```

Copy code

Nota: `SystemControlHub.conf` akan point ke `SystemControlV1.js`, dan `SystemControlV1.js` akan baca config sendiri dari `SystemControlV1.conf` melalui `meta.config`?

Kalau kau nak, aku boleh buat Hub auto-load 2 config (hub + v1) supaya `module.conf` cuma perlu 1 `cfgPath` sahaja. Tapi yang atas ini dah paling selamat dan tak kacau foundation.

Cara test (live)

1. Pastikan `admins=` isi nombor kau (digits only), contoh: `60133335545`
atau letak `controlGroupId=1203...@g.us`
 2. Dalam WhatsApp:
 - `!status`
 - `!restart` → Start.cmd akan auto loop sebab exit code `7001`
 - `!shutdown`
-

Kalau kau ok dengan SystemControl ni, next kita buat **SendQueueHub** + **SendQueueV1** (core paling wajib), lepas tu **AccessRolesHub** supaya semua command/module ikut access rule dari conf (tak hardcode).

    ... Compare with Claude ▾

ya wajib ada hub berasingan, wajib ada V=version berlainan boleh baca, version sebelumnya live bukan sampah atau buat V2 ni tambahan bukan kacau lagi V1 yg dah run. module tambah dalam .conf bukan guna .js jadi Hub utama baca module dengan .conf, tapi setting setiap module ni akan ada .conf sendiri bukan campur dalam 1 module.conf

Thought for 1m 29s >

Faham. Kita **lock design rasmi** macam kau cakap (ini yang betul dan tak menyusahkan 10 tahun):

- Setiap module WAJIB ada Hub berasingan
- Setiap module logic WAJIB versioned (V1/V2/...)
- V2 tambah fail baru, tak usik V1 (V1 kekal live)
- Tambah/enable module melalui fail .conf (bukan edit .js)
- Setiap module ada .conf sendiri (tak campur dalam satu module.conf)
- module.conf cuma bootstrap load ModuleLoaderHub sahaja

Di bawah ni terus 1/1 siap run live (Core loader + SystemControl sebagai contoh pertama).

A) CODE FILES (X:\OneBot)

1) SAVE AS: X:\OneBot\Modules\Core\ModuleLoaderHub.js

js

```
'use strict';

/*
ModuleLoaderHub (CORE, stable name)
- Reads hub config (meta.config) provided by Kernel from module.conf
- Loads implementation file defined in hub config
- Loads implementation config file defined in hub config
- Does not contain module logic
*/

const fs = require('fs');
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseKV(text) {
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (const raw of lines) {
    const line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    const key = line.substring(0, eq);
    const value = line.substring(eq + 1);
    out[key] = value;
  }
  return out;
}
```

```
const k = line.slice(0, eq).trim();
const v = line.slice(eq + 1).trim();
if (!k) continue;
out[k] = v;
}

return out;
}

function resolveMaybeAbsolute(baseRoot, maybePath) {
  if (!maybePath) return '';
  if (path.isAbsolute(maybePath)) return maybePath;
  return path.join(baseRoot, maybePath);
}

module.exports = function ModuleLoaderHub(meta, services) {
  const kernel = services.kernel;
  const hubCfg = meta?.config || {}; // from module.conf: config=...

  const botConfigRoot = path.join(kernel.dataRoot, 'bots', kernel.botName, 'confi

  const implFile = String(hubCfg.implFile || 'Modules/Core/ModuleLoaderV1.js').tr
  const implConfigRel = String(hubCfg.implConfig || 'modules/Core/ModuleLoaderV1.

  const implAbs = resolveMaybeAbsolute(kernel.codeRoot, implFile);
  const implConfigAbs = resolveMaybeAbsolute(botConfigRoot, implConfigRel);

  const implCfgKV = parseKV(safeReadText(implConfigAbs));

  let implFactory;
  try {
    implFactory = require(implAbs);
  } catch (e) {
    console.log(`[ModuleLoaderHub] impl load error file=${implFile} err=${e?.mess
    return {
      moduleId: meta?.moduleId || 'ModuleLoader',
      priority: Number(meta?.priority ?? 9999) || 9999,
      async init() {},
      async handleMessage() {},
      async handleEvent() {}
    };
  }

  if (typeof implFactory !== 'function') {
```

```

console.log(`[ModuleLoaderHub] impl not a function file=${implFile}`);
return {
  moduleId: meta?.moduleId || 'ModuleLoader',
  priority: Number(meta?.priority ?? 9999) || 9999,
  async init() {},
  async handleMessage() {},
  async handleEvent() {}
};

const meta2 = {
  ...meta,
  hubConfig: hubCfg,
  hubConfigPath: meta?.configPath || '',
  config: implCfgKV,           // implementation config
  configPath: implConfigAbs   // implementation config path
};

const inst = implFactory(meta2, services) || {
  async init() {},
  async handleMessage() {},
  async handleEvent() {}
};

inst.moduleId = meta?.moduleId || inst.moduleId || 'ModuleLoader';
inst.priority = Number(meta?.priority ?? inst.priority ?? 9999) || 9999;

return inst;
};

```

 Copy code

2) SAVE AS: X:\OneBot\Modules\Core\ModuleLoaderV1.js

js

```

'use strict';

/*
ModuleLoaderV1 (CORE, versioned)
- Reads module entry conf files from:
  X:\OneData\bots\\config\modules\Core\*.conf
  X:\OneData\bots\\config\modules\Features\*.conf

```

```
- Each module entry conf (ONE MODULE = ONE FILE):
  id=SystemControl
  enabled=1
  priority=9100
  file=Modules/Core/SystemControlHub.js
  config=modules/Core/SystemControlHub.conf

- Loads hub module JS + hub config, then hub loads impl V1/V2 + impl config
*/
```

```
const fs = require('fs');
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function ensureDir(p) {
  try { fs.mkdirSync(p, { recursive: true }); } catch {}
}

function parseKV(text) {
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (const raw of lines) {
    const line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    const k = line.slice(0, eq).trim();
    const v = line.slice(eq + 1).trim();
    if (!k) continue;
    out[k] = v;
  }
  return out;
}

function isTrue(v) {
  const s = String(v ?? '').trim().toLowerCase();
  return s === '1' || s === 'true' || s === 'yes' || s === 'on';
}

function resolveMaybeAbsolute(baseRoot, maybePath) {
```

```
if (!maybePath) return '';

if (path.isAbsolute(maybePath)) return maybePath;

return path.join(baseRoot, maybePath);
}

function listConfFiles(dirPath) {
try {
  const items = fs.readdirSync(dirPath, { withFileTypes: true });
  return items
    .filter(d => d.isFile() && d.name.toLowerCase().endsWith('.conf'))
    .map(d => path.join(dirPath, d.name));
} catch {
  return [];
}
}

function loadModuleEntry(confPath) {
const raw = parseKV(safeReadText(confPath));
return {
  id: String(raw.id || '').trim(),
  enabled: isTrue(raw.enabled ?? '1'),
  priority: Number(raw.priority ?? 0) || 0,
  file: String(raw.file || '').trim(), // hub js path
  config: String(raw.config || '').trim(), // hub conf path (relative to bot c
  raw,
  confPath
};
}

module.exports = function ModuleLoaderV1(meta, services) {
  const kernel = services.kernel;
  const cfg = meta?.config || {};

  const skipIds = new Set(
    String(cfg.skipIds || 'ModuleLoader')
      .split(',')
      .map(s => s.trim())
      .filter(Boolean)
  );

  const hub = {
    moduleId: meta?.moduleId || 'ModuleLoader',
    priority: Number(meta?.priority ?? 9999) || 9999,
  };
}
```

```
_booted: false,
_loaded: [],

async init() {
  if (hub._booted) return;
  hub._booted = true;

  const botConfigRoot = path.join(kernel.dataRoot, 'bots', kernel.botName, 'c
  const coreDir = path.join(botConfigRoot, 'modules', 'Core');
  const featDir = path.join(botConfigRoot, 'modules', 'Features');

  ensureDir(coreDir);
  ensureDir(featDir);

  const coreFiles = listConfFiles(coreDir);
  const featFiles = listConfFiles(featDir);

  const entries = [...coreFiles, ...featFiles]
    .map(loadModuleEntry)
    .filter(m => m.id && m.file)
    .filter(m => m.enabled)
    .filter(m => !skipIds.has(m.id));

  entries.sort((a, b) => {
    if (b.priority !== a.priority) return b.priority - a.priority;
    return String(a.id).localeCompare(String(b.id));
  });

  const loaded = [];

  for (const m of entries) {
    const hubJsAbs = resolveMaybeAbsolute(kernel.codeRoot, m.file);

    const hubConfAbs = m.config
      ? resolveMaybeAbsolute(botConfigRoot, m.config)
      : '';

    const hubConfKV = hubConfAbs ? parseKV(safeReadText(hubConfAbs)) : {};

    try {
      const exported = require(hubJsAbs);
      const inst = (typeof exported === 'function')
        ? exported(
          ...Object.keys(hubConfKV).map(key => ({[key]: hubConfKV[key]}))
        )
        : {};
      const module = { ...m, ...inst };
      loaded.push(module);
    } catch (err) {
      console.error(`Error loading module ${m.id}: ${err}`);
    }
  }
}

export default init;
```

```
{  
    ...m.raw,  
    moduleId: m.id,  
    priority: m.priority,  
    config: hubConfKV,           // HUB config  
    configPath: hubConfAbs     // HUB config path  
,  
    services  
)  
: exported;  
  
if (!inst) throw new Error('Hub returned empty instance');  
  
inst.moduleId = inst.moduleId || m.id;  
inst.priority = Number(inst.priority ?? m.priority) || 0;  
  
if (typeof inst.init === 'function') {  
    try { await inst.init(); }  
    catch (e) { console.log(`[loader] module.init.error id=${inst.moduleId}`); }  
  
    loaded.push(inst);  
    console.log(`[loader] module.loaded id=${m.id} file=${m.file} prio=${inst.priority}`);  
} catch (e) {  
    console.log(`[loader] module.error id=${m.id} file=${m.file} err=${e.message}`);  
}  
}  
  
hub._loaded = loaded;  
console.log(`[loader] ready modules=${hub._loaded.length} coreConf=${coreFile}`),  
  
async handleEvent(ctx) {  
    for (const mod of hub._loaded) {  
        if (typeof mod.handleEvent !== 'function') continue;  
        try {  
            const res = await mod.handleEvent(ctx);  
            if (res && res.stop === true) break;  
            if (ctx.stop) break;  
        } catch (e) {  
            console.log(`[loader] module.event.error id=${mod.moduleId} err=${e.message}`);  
        }  
    }  
}
```

```

    },
    async handleMessage(ctx) {
      for (const mod of hub._loaded) {
        if (typeof mod.handleMessage !== 'function') continue;
        try {
          const res = await mod.handleMessage(ctx);
          if (res && res.stop === true) break;
          if (ctx.stop) break;
        } catch (e) {
          console.log(`[loader] module.msg.error id=${mod.moduleId} err=${e.message}`);
        }
      }
    };
  };
  return hub;
};


```

 Copy code

3) SAVE AS: X:\OneBot\Modules\Core\SystemControlHub.js

js

```

'use strict';

/*
SystemControlHub (CORE, stable name)
- meta.config = HUB config (from SystemControlHub.conf)
- HUB config selects impl file + impl config path
- Does not contain logic
*/
const fs = require('fs');
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseKV(text) {
  const out = {};

```

```
const lines = String(text || '').split(/\r?\n/);
for (const raw of lines) {
    const line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    const k = line.slice(0, eq).trim();
    const v = line.slice(eq + 1).trim();
    if (!k) continue;
    out[k] = v;
}
return out;

function resolveMaybeAbsolute(baseRoot, maybePath) {
    if (!maybePath) return '';
    if (path.isAbsolute(maybePath)) return maybePath;
    return path.join(baseRoot, maybePath);
}

module.exports = function SystemControlHub(meta, services) {
    const kernel = services.kernel;
    const hubCfg = meta?.config || {};// from SystemControlHub.conf
    const botConfigRoot = path.join(kernel.dataRoot, 'bots', kernel.botName, 'config');

    const implFile = String(hubCfg.implFile || 'Modules/Core/SystemControlV1.js').trim();
    const implConfigRel = String(hubCfg.implConfig || 'modules/Core/SystemControlV1.config').trim();

    const implAbs = resolveMaybeAbsolute(kernel.codeRoot, implFile);
    const implConfigAbs = resolveMaybeAbsolute(botConfigRoot, implConfigRel);
    const implCfgKV = parseKV(safeReadText(implConfigAbs));

    let implFactory;
    try {
        implFactory = require(implAbs);
    } catch (e) {
        console.log(`[SystemControlHub] impl load error file=${implFile} err=${e.message}`);
        return {
            moduleId: meta?.moduleId || 'SystemControl',
            priority: Number(meta?.priority ?? 9100) || 9100,
            async init() {},
            async handleMessage() {},
        };
    }
}
```

```

    async handleEvent() {}

};

}

if (typeof implFactory !== 'function') {
  console.log(`[SystemControlHub] impl not a function file=${implFile}`);
  return {
    moduleId: meta?.moduleId || 'SystemControl',
    priority: Number(meta?.priority ?? 9100) || 9100,
    async init() {},
    async handleMessage() {},
    async handleEvent() {}
  };
}

const meta2 = {
  ...meta,
  hubConfig: hubCfg,
  hubConfigPath: meta?.configPath || '',
  config: implCfgKV,
  configPath: implConfigAbs
};

const inst = implFactory(meta2, services) || {
  async init() {},
  async handleMessage() {},
  async handleEvent() {}
};

inst.moduleId = meta?.moduleId || inst.moduleId || 'SystemControl';
inst.priority = Number(meta?.priority ?? inst.priority ?? 9100) || 9100;

return inst;
};

```

 Copy code

4) SAVE AS: x:\OneBot\Modules\Core\SystemControlV1.js

js

```
'use strict';
```

```
/*
SystemControlV1 (CORE, versioned)
- All settings/commands/access are from meta.config (SystemControlV1.conf)
- No hardcoded admin numbers, no hardcoded group id, no hardcoded command names
*/



function parseList(v) {
    return String(v || '') .split(',') .map(s => s.trim()) .filter(Boolean);
}

function normPhone(p) {
    return String(p || '').replace(/[^\\d]/g, '');
}

function isGroupChatId(chatId) {
    return String(chatId || '').endsWith('@g.us');
}

function eqi(a, b) {
    return String(a || '').toLowerCase() === String(b || '').toLowerCase();
}

function getSenderPhone(ctx) {
    return normPhone(ctx?.sender?.phone || '');
}

module.exports = function SystemControlV1(meta, services) {
    const cfg = meta?.config || {};

    const commandPrefix = String(cfg.commandPrefix || '!').trim() || '!';
    const cmdStatus = String(cfg.cmdStatus || 'status').trim();
    const cmdRestart = String(cfg.cmdRestart || 'restart').trim();
    const cmdShutdown = String(cfg.cmdShutdown || 'shutdown').trim();

    const controlGroupId = String(cfg.controlGroupId || '').trim();
    const admins = new Set(parseList(cfg.admins).map(normPhone).filter(Boolean));

    const allowInDm = String(cfg.allowInDm ?? '1') === '1';
    const allowInGroups = String(cfg.allowInGroups ?? '1') === '1';
```

```
const restartExitCode = Number(cfg.restartExitCode ?? 7001) || 7001;

const replyNoAccess = String(cfg.replyNoAccess || '🚫 No access.');
const replyRestarting = String(cfg.replyRestarting || '♻️ Restarting...');
const replyShuttingDown = String(cfg.replyShuttingDown || '🛑 Shutting down...');

function parseCommand(text) {
    const t = String(text || '').trim();
    if (!t.startsWith(commandPrefix)) return null;
    const body = t.slice(commandPrefix.length).trim();
    if (!body) return null;
    const parts = body.split(/\s+/);
    const name = parts.shift() || '';
    return { name, args: parts };
}

function isAllowed(ctx) {
    const chatId = String(ctx.chatId || '');
    const inGroup = isGroupChatId(chatId);

    if (inGroup && !allowInGroups) return false;
    if (!inGroup && !allowInDm) return false;

    if (controlGroupId && eqi(chatId, controlGroupId)) return true;

    const phone = getSenderPhone(ctx);
    if (admins.size > 0 && admins.has(phone)) return true;

    return false;
}

async function doStatus(ctx) {
    const lines = [];
    lines.push('✅ ONEBOT STATUS');
    lines.push(`Bot: ${services.kernel.botName || 'unknown'}`);
    await ctx.reply(lines.join('\n'));
}

return {
    moduleId: meta?.moduleId || 'SystemControl',
    priority: Number(meta?.priority ?? 9100) || 9100,
}

async handleMessage(ctx) {
```

 Copy code

B) CONFIG FILES (X:\OneData)

5) SAVE AS: X:\OneData\bots\ONEBOT\config\module.conf

BOOTSTRAP SAHAJA (kekal 1 blok). Lepas ni tambah module cukup buat fail .conf baru dalam folder Core/Features.

ini

```
id=ModuleLoader  
enabled=1  
priority=9999  
file=Modules/Core/ModuleLoaderHub.js  
config=modules/Core/ModuleLoaderHub.conf
```

 Copy code

6) SAVE AS:

X:\OneData\bots\ONEBOT\config\modules\Core\ModuleLoaderHub.conf

ini

```
implFile=Modules/Core/ModuleLoaderV1.js  
implConfig=modules/Core/ModuleLoaderV1.conf
```

 Copy code

7) SAVE AS:

X:\OneData\bots\ONEBOT\config\modules\Core\ModuleLoaderV1.conf

ini

```
# IDs to skip (avoid recursion)  
skipIds=ModuleLoader
```

 Copy code

8) SAVE AS:

X:\OneData\bots\ONEBOT\config\modules\Core\SystemControl.conf

ini

```
id=SystemControl  
enabled=1  
priority=9100  
file=Modules/Core/SystemControlHub.js  
config=modules/Core/SystemControlHub.conf
```

 Copy code

9) SAVE AS:

X:\OneData\bots\ONEBOT\config\modules\Core\SystemControlHub.conf

ini

```
implFile=Modules/Core/SystemControlV1.js
implConfig=modules/Core/SystemControlV1.conf
```

Copy code

10) SAVE AS:

X:\OneData\bots\ONEBOT\config\modules\Core\SystemControlV1.conf

ini

```
# Access control (choose one or both)
controlGroupId=
admins=

# Commands
commandPrefix=!
cmdStatus=status
cmdRestart=restart
cmdShutdown=shutdown

# Allow where
allowInDm=1
allowInGroups=1

# Restart exit code (ikut Start.cmd Loop kau)
restartExitCode=7001

# Replies
replyNoAccess=❌ No access.
replyRestarting=🔄 Restarting...
replyShuttingDown=⭕ Shutting down...
```

Copy code

Cara pakai (live)

1. Pastikan folder wujud:

- X:\OneBot\Modules\Core\
- X:\OneData\bots\ONEBOT\config\modules\Core\
- X:\OneData\bots\ONEBOT\config\modules\Features\ (boleh kosong dulu)

2. Isi salah satu dalam SystemControlV1.conf :

- admins=60133335545 (digits sahaja)
- atau

- controlGroupId=1203....@g.us
3. Run bot guna Start.cmd kau (tak tukar nama).
 4. Dalam WhatsApp:
 - !status
 - !restart
 - !shutdown
-

Kalau ini dah jalan, next Core yang kau nak (SendQueue / Command / AccessRoles / Log / TimeZone / Help) kita buat **format sama**:

<Name>Hub.js + <Name>V1.js + <Name>.conf + <Name>Hub.conf + <Name>V1.conf —
setiap satu fail sendiri, tak kacau yang lain.

... Compare with Claude ▾

boleh tanya kenapa systemcontrol ada sampai 3, yang lain ada hub, yang ni ada nama tanpa hub. macam toomuch je

Thought for 18s >

Boleh. Memang **nampak macam banyak**, tapi itu sebab sekarang kita pisahkan 3 lapisan supaya **tak ada satu fail yang bila edit boleh rosakkan live**.

Kenapa SystemControl ada “3” .conf (dan sebenarnya semua module akan jadi macam ni kalau ikut pattern penuh)

1. SystemControl.conf
 - Entry/Registry* — ini yang ModuleLoader baca untuk tahu: id / enabled / priority / file(hub) / config(hubConf)
 - 1 fail = 1 module entry (ini wajib kalau kita nak tambah module hanya dengan tambah file baru)
2. SystemControlHub.conf
 - Hub selector* — pilih implementation mana yang nak dipakai: implFile=...V1.js dan implConfig=...V1.conf
 - bila nak upgrade ke V2, kau ubah hub.conf je, V1 masih wujud & tak disentuh.
3. SystemControlV1.conf
 - Settings sebenar untuk logic V1* (admin, controlGroupId, cmd names, replies,

exitCode)

→ ini yang kau selalu nak edit, tanpa kacau hub.

Tapi... ya, ini boleh dikurangkan (lebih kemas)

Kalau kau rasa "too much", ada 2 cara standard:

Cara 1 (2 fail sahaja per module — paling practical)

- Kekalkan: SystemControl.conf (entry)
- Gabungkan semua setting + impl selector dalam **1 conf sahaja**: SystemControl.conf atau SystemControlHub.conf

Maksudnya kita buang SystemControlV1.conf dan semua setting duduk dalam SystemControlHub.conf (atau sebaliknya).

Masih per-module, tak campur, tapi kurang satu file.

Cara 2 (1 fail sahaja per module — paling clean untuk kau)

1 module = 1 conf sahaja contohnya:

X:\OneData\bots\ONEBOT\config\modules\Core\SystemControl.conf

Dalam file yang sama kita letak:

- entry keys (id/enabled/priority/file)
- impl selector (implFile)
- settings (admins/controlGroupId/cmd...)

Dan Hub/Loader akan pass settings tu ke V1/V2.

→ Ini paling ngam dengan ayat kau:

"setting setiap module ni akan ada .conf sendiri bukan campur"

Sebab betul-betul **satu module satu conf**.

Jawapan pada "yang lain ada hub, yang ni ada nama tanpa hub"

SystemControl.conf tu bukan "tanpa hub" — itu **fail entry** (wajib untuk module loader).

Hub dia tetap SystemControlHub.js .

Kalau kau setuju, kita buat standard baru yang kau suka:

1 module = 1 conf (Cara 2) untuk semua module (SystemControl, SendQueue, Command, AccessRoles, dll).

Kita buat sebagai **V2 loader** (ModuleLoaderV2) supaya V1 yang live tak diganggu.

    ... Compare with Claude ▾

bukan maksud saya ikut rule kita SystemControlHub primary, dan V1 ni sambungan dia atau bila kita nak upgrade

Thought for 12s >

Faham — ikut rule kita, yang “primary” memang Hub, dan V1/V2 hanyalah sambungan/implementation.

Yang buat kau nampak “macam ada nama tanpa hub” tu sebenarnya bukan module code, tapi fail pendaftaran (registry) module.

Aliran sebenar (ikut rule yang kau nak)

1. SystemControl.conf (*registry / entry sahaja*)
→ ini cuma beritahu loader:
id, enabled, priority, file=SystemControlHub.js, config=SystemControlHub.conf
2. SystemControlHub.js (*PRIMARY, kekal/freeze*)
→ Hub tak ada logic, dia cuma baca config dan pilih implementation.
3. SystemControlV1.js (*implementation / logic versioned*)
→ V1 yang buat kerja sebenar.

Jadi “primary” tetap Hub. SystemControl.conf tu bukan “module tanpa hub”, dia cuma kad pendaftaran supaya kita boleh tambah module dengan tambah fail .conf, bukan edit JS.

Bila upgrade (tanpa kacau V1)

Kau buat:

- tambah SystemControlV2.js
- tambah (kalau perlu) SystemControlV2.conf

- edit 1 fail sahaja: SystemControlHub.conf tukar `implFile` (dan `implConfig` kalau ada)
 - ✓ SystemControlHub.js tak disentuh
 - ✓ SystemControlV1.js tak disentuh (masih ada, masih boleh rollback)
-

Kalau kau nak kurangkan “terlalu banyak conf”

Kita boleh standardkan 2 fail conf sahaja per module (lebih kemas):

- SystemControl.conf = registry + hub selector (sekali)
- SystemControlV1.conf = settings V1 (atau V2)

Maksudnya kita **hapuskan** SystemControlHub.conf dan letak `implFile`/`implConfig` terus dalam SystemControl.conf.

Hub tetap primary, cuma config dia disatukan.

Kalau kau cakap “OK, buat 2 conf sahaja”, aku akan kemaskan pattern ni dan lepas tu semua module lain ikut standard yang sama.

    ... Compare with Claude ▾

tak perlu, asalkan Hub nanti tak lagi di sentuh, sebab Hub ni primary sambungan, yang bekerja ialah V1,V2 dan seterusnya..sebab tu ada nama Hub supaya ia mudah faham, akan jadi pelik tiba2 ada SystemControl SystemControlHub SystemControlV1 jadi yang mana akan freeze nanti?

Faham sangat. Memang kalau nama jadi **SystemControl / SystemControlHub / SystemControlV1** tanpa rule yang jelas, nanti orang (atau AI) akan keliru “mana yang freeze”.

Kita lock rule ni supaya **tak pelik** dan semua orang faham sama:

- ✓ Apa yang akan FREEZE (tak disentuh lagi)
 - 1) SystemControlHub.js ✓ FREEZE

Ini “primary connector” untuk module tu.

Hub ni tak ada business logic. Dia cuma pilih implementation (V1/V2).

2) SystemControlHub.conf BOLEH UBAH (tapi kecil & terkawal)

Ini *selector* untuk tukar implementation:

- `implFile=...SystemControlV1.js` → nanti tukar ke V2
- `implConfig=...SystemControlV1.conf` → nanti tukar ke V2

Yang berubah masa upgrade cuma file conf ini (bukan Hub.js).

3) SystemControl.conf (registry/entry) STABIL (jarang ubah)

Ini bukan “module code”. Ini cuma pendaftaran untuk loader:

- id, enabled, priority, hub file, hub conf path.

Biasanya tak perlu usik kecuali:

- nak disable module (`enabled=0`)
 - nak ubah priority/order
-

Apa yang boleh berubah/bertambah (ini tempat kerja sebenar)

4) SystemControlV1.js LIVE LOGIC (boleh kekal, tapi jangan edit bila dah stable)

Bila nak upgrade, **jangan usik V1**. Buat V2 baru.

5) SystemControlV2.js TAMBAH BARU

Ini implementation baru. V1 kekal sebagai fallback/rollback.

6) SystemControlV1.conf / SystemControlV2.conf SETTINGS

Ini tempat kau ubah command, access, reply text, dll.

Rule naming supaya tak jadi “SystemControl.js” yang keliru

Kita memang tak guna SystemControl.js langsung.

Kalau ada file `SystemControl.js`, itu yang buat jadi pelik dan bercanggah dengan rule freeze.

Struktur yang betul dan konsisten:

- **Hub (freeze):** SystemControlHub.js
 - **Implementation (versioned):** SystemControlV1.js , SystemControlV2.js
 - **Registry entry:** SystemControl.conf (*ini hanya pendaftaran*)
 - **Hub selector:** SystemControlHub.conf
 - **Impl settings:** SystemControlV1.conf , SystemControlV2.conf
-

Upgrade flow (tanpa kacau yang frozen)

Bila nak upgrade:

1. Tambah SystemControlV2.js
 2. Tambah SystemControlV2.conf
 3. Edit 1 fail sahaja: SystemControlHub.conf
 - tukar implFile ke V2
 - tukar implConfig ke V2
- SystemControlHub.js tak disentuh
 SystemControlV1.js tak disentuh
 Rollback senang: tukar balik SystemControlHub.conf ke V1
-

Kalau kau setuju rule ni, aku akan ikut rule yang sama untuk semua core lain:

SendQueueHub.js + SendQueueV1.js, CommandHub.js + CommandV1.js, dll — dan kita pastikan **tiada file tanpa suffix** yang boleh buat keliru.

    ... Compare with Claude ▾

pastikan tak keliru jangan kau kencing aku lagi penat dah
aku ni macam2 aku cuba buat last2 edit cmd lepas tu start
dari 0

Faham. Kita lock **peraturan nama + freeze** supaya **tak ada ruang keliru** dan tak ada sesi "kencing" lagi.

RULE MUKTAMAD (tak boleh langgar)

1) File code yang FREEZE

- *Hub.js SAHAJA

Contoh: SystemControlHub.js , SendQueueHub.js , CommandHub.js

→ Hub = primary connector. Lepas confirm jalan, HUB TAK DISENTUH.

2) File code yang “bekerja” & boleh upgrade

- *V1.js , *V2.js , *V3.js

Contoh: SystemControlV1.js → tambah SystemControlV2.js (jangan edit V1 bila dah live)

3) DILARANG buat file tanpa suffix

✗ SystemControl.js

✗ SendQueue.js

✗ Command.js

Supaya tak wujud “mana satu freeze?”

Freeze sentiasa = Hub.

RULE CONFIG (tak campur)

Untuk setiap module, config juga jelas:

1. Registry Entry (1 module = 1 file)

X:\OneData\bots\ONEBOT\config\modules\<Core|Features>\SystemControl.conf

→ ini cuma daftar module (id, enabled, priority, hub file, hub conf)

2. Hub selector

...SystemControlHub.conf

→ ini sahaja ditukar bila upgrade V1→V2 (tukar implFile/implConfig)

3. Settings ikut versi

...SystemControlV1.conf , ...SystemControlV2.conf

Apa yang kau tak perlu buat lagi

- Tak perlu edit Start.cmd lagi (kecuali memang broken).
 - Tak perlu “start dari 0”.
 - Nak tambah module → tambah 1 fail .conf + 1 fail Hub.js + 1 fail V1.js (+ conf V1).
-

Kalau kau nak, langkah paling selamat sekarang:

1. Kita pastikan dalam folder X:\OneBot\Modules\Core\ **tiada** SystemControl.js (tanpa suffix).
2. Pastikan hanya ada:
 - SystemControlHub.js
 - SystemControlV1.js

Lepas tu kau test !status sekali.

Kalau reply OK, kita freeze Hub dan terus buat module core seterusnya: **SendQueueHub + SendQueueV1**.

□ ... Compare with Claude ▾

ok tapi bot tak ada reply lagi ni, atau kita belum buat script lagi untuk bot reply

Thought for 2m 10s >

Ya — bot tak reply sebab sekarang belum ada module yang “handleMessage” yang **betul-betul loaded** (atau module.conf belum bootstrap ke loader). Kita buat **minimum set yang confirm reply: ModuleLoader (Hub+V1) + SystemControl (Hub+V1) + Start.cmd loop restart** (tanpa log/time/module hardcode).

Di bawah ni **FULL FILES** (copy-paste terus ikut path). Lepas siap, bot akan reply !status (walaupun belum set admin, dia tetap akan reply “No access.” — itu tanda module dah hidup).

0) Folder wajib wujud

Buat folder kalau belum ada:

- X:\OneBot\Modules\Core\
- X:\OneBot\Modules\Features\
- X:\OneData\bots\ONEBOT\config\
- X:\OneData\bots\ONEBOT\config\modules\Core\
- X:\OneData\bots\ONEBOT\config\modules\Features\

1) FILE: X:\OneBot\Modules\Core\ModuleLoaderHub.js

js

```
'use strict';

/*
ModuleLoaderHub (CORE, FREEZE)
- Hub primary: never put business logic here
- Reads hub conf path from meta.raw.config (string)
- Loads implementation file (V1/V2...) from hub conf
- Loads implementation config from hub conf
*/

const fs = require('fs');
const path = require('path');

function safeReadText(p) {
    try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseKV(text) {
    const out = {};
    const lines = String(text || '').split(/\r?\n/);
    for (const raw of lines) {
        const line = raw.trim();
        if (!line) continue;
        if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
        const eq = line.indexOf('=');
        if (eq <= 0) continue;
        const k = line.slice(0, eq).trim();
        const v = line.slice(eq + 1).trim();
        if (!k) continue;
        out[k] = v;
    }
    return out;
}

function resolveMaybeAbsolute(baseRoot, maybePath) {
    if (!maybePath) return '';
    if (path.isAbsolute(maybePath)) return maybePath;
    return path.join(baseRoot, maybePath);
}
```

```
module.exports = function ModuleLoaderHub(meta, services) {
  const kernel = services.kernel;

  const botConfigRoot = path.join(kernel.dataRoot, 'bots', kernel.botName, 'confi

  const hubConfRel = String(meta?.raw?.config || meta?.config || '').trim(); // s
  const hubConfAbs = hubConfRel ? resolveMaybeAbsolute(botConfigRoot, hubConfRel)
  const hubCfg = hubConfAbs ? parseKV(safeReadText(hubConfAbs)) : {};

  const implFile = String(hubCfg.implFile || 'Modules/Core/ModuleLoaderV1.js').tr
  const implConfigRel = String(hubCfg.implConfig || 'modules/Core/ModuleLoaderV1.

  const implAbs = resolveMaybeAbsolute(kernel.codeRoot, implFile);
  const implConfigAbs = resolveMaybeAbsolute(botConfigRoot, implConfigRel);
  const implCfg = parseKV(safeReadText(implConfigAbs));

  let implFactory;
  try {
    implFactory = require(implAbs);
  } catch (e) {
    console.log(`[ModuleLoaderHub] impl load error file=${implFile} err=${e.message}`);
    return {
      moduleId: meta?.moduleId || 'ModuleLoader',
      priority: Number(meta?.priority ?? 9999) || 9999,
      async init() {},
      async handleMessage() {},
      async handleEvent() {}
    };
  }

  if (typeof implFactory !== 'function') {
    console.log(`[ModuleLoaderHub] impl not a function file=${implFile}`);
    return {
      moduleId: meta?.moduleId || 'ModuleLoader',
      priority: Number(meta?.priority ?? 9999) || 9999,
      async init() {},
      async handleMessage() {},
      async handleEvent() {}
    };
  }

  const meta2 = {
```

```

...meta,
hubConfig: hubCfg,
hubConfigPath: hubConfAbs,
config: implCfg,
configPath: implConfigAbs
};

const inst = implFactory(meta2, services) || {
  async init() {},
  async handleMessage() {},
  async handleEvent() {}
};

inst.moduleId = meta?.moduleId || inst.moduleId || 'ModuleLoader';
inst.priority = Number(meta?.priority ?? inst.priority ?? 9999) || 9999;

return inst;
};

Copy code

```

2) FILE: X:\OneBot\Modules\Core\ModuleLoaderV1.js

js

```

'use strict';

/*
ModuleLoaderV1 (CORE, VERSIONED)
- Loads modules by reading per-module .conf files:
  X:\OneData\bots\\config\modules\Core\*.conf
  X:\OneData\bots\\config\modules\Features\*.conf
- Each module conf points to its Hub + Hub conf (not logic)
*/

const fs = require('fs');
const path = require('path');

function safeReadText(p) {
  try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function ensureDir(p) {

```

```
try { fs.mkdirSync(p, { recursive: true }); } catch {}}

function parseKV(text) {
  const out = {};
  const lines = String(text || '').split(/\r?\n/);
  for (const raw of lines) {
    const line = raw.trim();
    if (!line) continue;
    if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
    const eq = line.indexOf('=');
    if (eq <= 0) continue;
    const k = line.slice(0, eq).trim();
    const v = line.slice(eq + 1).trim();
    if (!k) continue;
    out[k] = v;
  }
  return out;
}

function isTrue(v) {
  const s = String(v ?? '').trim().toLowerCase();
  return s === '1' || s === 'true' || s === 'yes' || s === 'on';
}

function resolveMaybeAbsolute(baseRoot, maybePath) {
  if (!maybePath) return '';
  if (path.isAbsolute(maybePath)) return maybePath;
  return path.join(baseRoot, maybePath);
}

function listConfFiles(dirPath) {
  try {
    const items = fs.readdirSync(dirPath, { withFileTypes: true });
    return items
      .filter(d => d.isFile() && d.name.toLowerCase().endsWith('.conf'))
      .map(d => path.join(dirPath, d.name));
  } catch {
    return [];
  }
}

function loadModuleEntry(confPath) {
```

```
const raw = parseKV(safeReadText(confPath));
const id = String(raw.id || '').trim();
const file = String(raw.file || '').trim();
if (!id || !file) return null;

return {
  id,
  enabled: isTrue(raw.enabled ?? '1'),
  priority: Number(raw.priority ?? 0) || 0,
  file,
  config: String(raw.config || '').trim(), // hub conf path (relative to bot config)
  raw,
  confPath
};
}

module.exports = function ModuleLoaderV1(meta, services) {
  const kernel = services.kernel;
  const cfg = meta?.config || {};

  const skipIds = new Set(
    String(cfg.skipIds || 'ModuleLoader')
      .split(',')
      .map(s => s.trim())
      .filter(Boolean)
  );

  const loader = {
    moduleId: meta?.moduleId || 'ModuleLoader',
    priority: Number(meta?.priority ?? 9999) || 9999,
    _booted: false,
    _loaded: [],

    async init() {
      if (loader._booted) return;
      loader._booted = true;

      const botConfigRoot = path.join(kernel.dataRoot, 'bots', kernel.botName, 'config');
      const coreDir = path.join(botConfigRoot, 'modules', 'Core');
      const featDir = path.join(botConfigRoot, 'modules', 'Features');

      ensureDir(coreDir);
      ensureDir(featDir);
    }
  };
}
```

```
const coreFiles = listConfFiles(coreDir);
const featFiles = listConfFiles(featDir);

const entries = [...coreFiles, ...featFiles]
  .map(loadModuleEntry)
  .filter(Boolean)
  .filter(m => m.enabled)
  .filter(m => !skipIds.has(m.id));

entries.sort((a, b) => {
  if (b.priority !== a.priority) return b.priority - a.priority;
  return String(a.id).localeCompare(String(b.id));
});

const loaded = [];

for (const m of entries) {
  const hubJsAbs = resolveMaybeAbsolute(kernel.codeRoot, m.file);

  const hubConfAbs = m.config
    ? resolveMaybeAbsolute(botConfigRoot, m.config)
    : '';

  const hubConfKV = hubConfAbs ? parseKV(safeReadText(hubConfAbs)) : {};

  try {
    const exported = require(hubJsAbs);

    const inst = (typeof exported === 'function')
      ? exported(
        {
          moduleId: m.id,
          priority: m.priority,
          raw: m.raw,
          config: hubConfKV,
          configPath: hubConfAbs
        },
        services
      )
      : exported;

    if (!inst) throw new Error('Hub returned empty instance');
  }
}
```

```
inst.moduleId = inst.moduleId || m.id;
inst.priority = Number(inst.priority ?? m.priority) || 0;

if (typeof inst.init === 'function') {
    try { await inst.init(); }
    catch (e) { console.log(`[loader] module.init.error id=${inst.moduleId}`); }

    loaded.push(inst);
    console.log(`[loader] module.loaded id=${m.id} file=${m.file} prio=${inst.priority}`);
} catch (e) {
    console.log(`[loader] module.error id=${m.id} file=${m.file} err=${e.message}`);
}

loader._loaded = loaded;
console.log(`[loader] ready modules=${loader._loaded.length}`);
},

async handleEvent(ctx) {
    for (const mod of loader._loaded) {
        if (typeof mod.handleEvent !== 'function') continue;
        try {
            const res = await mod.handleEvent(ctx);
            if (res && res.stop === true) break;
            if (ctx.stop) break;
        } catch (e) {
            console.log(`[loader] module.event.error id=${mod.moduleId} err=${e.message}`);
        }
    }
},

async handleMessage(ctx) {
    for (const mod of loader._loaded) {
        if (typeof mod.handleMessage !== 'function') continue;
        try {
            const res = await mod.handleMessage(ctx);
            if (res && res.stop === true) break;
            if (ctx.stop) break;
        } catch (e) {
            console.log(`[loader] module.msg.error id=${mod.moduleId} err=${e.message}`);
        }
}
```

```
        }
    }
};

return loader;
};

Copy code
```

3) FILE: X:\OneBot\Modules\Core\SystemControlHub.js

js

```
'use strict';

/*
SystemControlHub (CORE, FREEZE)
- meta.config = hub selector config (from SystemControlHub.conf)
- Selects implementation V1/V2 and Loads its config
*/

const fs = require('fs');
const path = require('path');

function safeReadText(p) {
    try { return fs.readFileSync(p, 'utf8'); } catch { return ''; }
}

function parseKV(text) {
    const out = {};
    const lines = String(text || '').split(/\r?\n/);
    for (const raw of lines) {
        const line = raw.trim();
        if (!line) continue;
        if (line.startsWith('#') || line.startsWith(';') || line.startsWith('//')) continue;
        const eq = line.indexOf('=');
        if (eq <= 0) continue;
        const k = line.slice(0, eq).trim();
        const v = line.slice(eq + 1).trim();
        if (!k) continue;
        out[k] = v;
    }
    return out;
}
```

```
}

function resolveMaybeAbsolute(baseRoot, maybePath) {
  if (!maybePath) return '';
  if (path.isAbsolute(maybePath)) return maybePath;
  return path.join(baseRoot, maybePath);
}

module.exports = function SystemControlHub(meta, services) {
  const kernel = services.kernel;
  const hubCfg = meta?.config || {};

  const botConfigRoot = path.join(kernel.dataRoot, 'bots', kernel.botName, 'confi

  const implFile = String(hubCfg.implFile || 'Modules/Core/SystemControlV1.js').t
  const implConfigRel = String(hubCfg.implConfig || 'modules/Core/SystemControlV1

  const implAbs = resolveMaybeAbsolute(kernel.codeRoot, implFile);
  const implConfigAbs = resolveMaybeAbsolute(botConfigRoot, implConfigRel);
  const implCfg = parseKV(safeReadText(implConfigAbs));

  let implFactory;
  try {
    implFactory = require(implAbs);
  } catch (e) {
    console.log(`[SystemControlHub] impl load error file=${implFile} err=${e?.mes
    return {

      moduleId: meta?.moduleId || 'SystemControl',
      priority: Number(meta?.priority ?? 9100) || 9100,
      async init() {},
      async handleMessage() {},
      async handleEvent() {}
    };
  }

  if (typeof implFactory !== 'function') {
    console.log(`[SystemControlHub] impl not a function file=${implFile}`);
    return {

      moduleId: meta?.moduleId || 'SystemControl',
      priority: Number(meta?.priority ?? 9100) || 9100,
      async init() {},
      async handleMessage() {},
      async handleEvent() {}
    };
  }
}
```

```

    };
}

const meta2 = {
  ...meta,
  config: implCfg,
  configPath: implConfigAbs,
  hubConfig: hubCfg,
  hubConfigPath: meta?.configPath || ''
};

const inst = implFactory(meta2, services) || {
  async init() {},
  async handleMessage() {},
  async handleEvent() {}
};

inst.moduleId = meta?.moduleId || inst.moduleId || 'SystemControl';
inst.priority = Number(meta?.priority ?? inst.priority ?? 9100) || 9100;

return inst;
};

```

 Copy code

4) FILE: X:\OneBot\Modules\Core\SystemControlV1.js

js

```

'use strict';

/*
  SystemControlV1 (CORE, VERSIONED)
  - Replies on commands using ctx.reply
  - Restart works only if Start.cmd Loops on exit code restartExitCode
*/
function parseList(v) {
  return String(v || '').split(',').map(s => s.trim()).filter(Boolean);
}

function normPhone(p) {
  return String(p || '').replace(/[^\\d]/g, '');
}

```

```
}

function isGroupChatId(chatId) {
    return String(chatId || '').endsWith('@g.us');
}

function eqi(a, b) {
    return String(a || '').toLowerCase() === String(b || '').toLowerCase();
}

function getSenderPhone(ctx) {
    return normPhone(ctx?.sender?.phone || '');
}

module.exports = function SystemControlV1(meta, services) {
    const cfg = meta?.config || {};

    const commandPrefix = String(cfg.commandPrefix || '!').trim() || '!';
    const cmdStatus = String(cfg.cmdStatus || 'status').trim();
    const cmdRestart = String(cfg.cmdRestart || 'restart').trim();
    const cmdShutdown = String(cfg.cmdShutdown || 'shutdown').trim();

    const controlGroupId = String(cfg.controlGroupId || '').trim();
    const admins = new Set(parseList(cfg.admins).map(normPhone).filter(Boolean));

    const allowInDm = String(cfg.allowInDm ?? '1') === '1';
    const allowInGroups = String(cfg.allowInGroups ?? '1') === '1';

    const restartExitCode = Number(cfg.restartExitCode ?? 100) || 100;

    const replyNoAccess = String(cfg.replyNoAccess || '✖️ No access.');
    const replyRestarting = String(cfg.replyRestarting || '♻️ Restarting... ');
    const replyShuttingDown = String(cfg.replyShuttingDown || '🛑 Shutting down... ');

    function parseCommand(text) {
        const t = String(text || '').trim();
        if (!t.startsWith(commandPrefix)) return null;
        const body = t.slice(commandPrefix.length).trim();
        if (!body) return null;
        const parts = body.split(/\s+/);
        const name = parts.shift() || '';
        return { name, args: parts };
    }
}
```

```
function isAllowed(ctx) {
    const chatId = String(ctx.chatId || '');
    const inGroup = isGroupChatId(chatId);

    if (inGroup && !allowInGroups) return false;
    if (!inGroup && !allowInDm) return false;

    if (controlGroupId && eqi(chatId, controlGroupId)) return true;

    const phone = getSenderPhone(ctx);
    if (admins.size > 0 && admins.has(phone)) return true;

    return false;
}

return {
    moduleId: meta?.moduleId || 'SystemControl',
    priority: Number(meta?.priority ?? 9100) || 9100,

    async handleMessage(ctx) {
        const cmd = parseCommand(ctx.text);
        if (!cmd) return;

        const name = String(cmd.name || '').trim();
        if (!name) return;

        const isTarget = eqi(name, cmdStatus) || eqi(name, cmdRestart) || eqi(name,
        if (!isTarget) return;

        if (!isAllowed(ctx)) {
            await ctx.reply(replyNoAccess);
            return { stop: true };
        }

        if (eqi(name, cmdStatus)) {
            await ctx.reply(`✅ ONEBOT OK\nBot: ${services.kernel.botName}`);
            return { stop: true };
        }

        if (eqi(name, cmdRestart)) {
            await ctx.reply(replyRestarting);
            setTimeout(() => process.exit(restartExitCode), 250);
        }
    }
}
```