# Bulutli o‘yinni tashkil etuvchi tayyor va ochiq manbali yechimlar

Bulutli o‘yin (cloud gaming) platformasi foydalanuvchilarga internet orqali o‘yinlarni oqim tarzida ijro etish imkonini beradi. Masalan, GeForce Now kabi xizmatlar bunday platformalardir. Siz ham AWS, Google Cloud, Azure va boshqa bulut provayderlarida serverlar ijaraga olib, tayyor yechimlar yoki ochiq kodli dasturiy ta’minotdan foydalangan holda o‘xshash tizimni yaratishingiz mumkin. Bu borada quyidagi loyihalar va vositalar dolzarb hisoblanadi:

* **Nestri** – ochiq manbali (open-source) cloud gaming platformasi boʻlib, foydalanuvchilarga oʻyin sessiyalariga doʻstlarni taklif qilish, oʻyin kutubxonalarini ulashish va o‘z GPU instansiyangizda uni ishlatish imkonini beradi[[1]](https://nestri.io#:~:text=Nestri%20is%20an%20open,on%20your%20own%20GPU%20instance). Nestri foydalanuvchilarning oʻz o‘yinlarini turli qurilmalarda past kechikish bilan ijro etishga qaratilgan va koʻp foydalanuvchili jamoaviy sessiyalarni qo‘llab-quvvatlaydi[[1]](https://nestri.io#:~:text=Nestri%20is%20an%20open,on%20your%20own%20GPU%20instance).
* **Cloudy Pad** – GeForce Now, Blacknut va shunga oʻxshash xizmatlarning bepul va ochiq kodli muqobili hisoblanadi[[2]](https://github.com/PierreBeucher/cloudypad#:~:text=Cloudy%20Pad%20is%20a%20Free%2C,machine%20or%20a%20costly%20subscription). Bu loyiha bulutda Sunshine serverini joylashtirishni oʻsonlashtirib, Moonlight klienti orqali o‘yin oqimini uzatadi. Cloudy Pad yordamida Steam, Pegasus yoki Lutris kabi platformalardan oʻyinlarni ishga tushirish va AWS, Google Cloud, Azure, Scaleway yoki Paperspace kabi bulut provayderlarida serverlar tashkil etish mumkin[[3]](https://github.com/PierreBeucher/cloudypad#:~:text=,Cloud%2C%20Azure%2C%20Scaleway%20or%20Paperspace). Shuningdek, bu vosita resurslarni optimallashtirish – masalan, arzon spot-instansiyalar va foydalanilmayotgan sessiyalarning avtomatik oʻchirilishi – kabi imkoniyatlarni ham taqdim etadi[[4]](https://github.com/PierreBeucher/cloudypad#:~:text=,Automatically%20shutdown%20inactive%20instances).
* **Sunshine + Moonlight** – Sunshine ochiq kodli game-stream host (server) dasturi, Moonlight esa uning mijozidir. Sunshine AMD, Intel va NVIDIA GPU-larini apparat kodlash uchun qo‘llab, minimal kechikishli o‘yin oqimini ta’minlaydi[[5]](https://github.com/LizardByte/Sunshine#:~:text=%E2%84%B9%EF%B8%8F%20About). Moonlight esa NVIDIA GameStream protokoli asosida ishlovchi ochiq kodli klent bo‘lib, 4K@120FPS gacha oqim va past kechikishli uzatishni amalga oshiradi[[6]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=software%20package%20include%3A). Ushbu kombinatsiya yordamida Linux yoki Windows serverda o‘yin yuritish va har qanday qo‘llab-quvvatlanadigan qurilmadan o‘ynash mumkin (Moonlight Android, iOS, Windows, macOS, Linux va boshqa platformalarni qo‘llaydi[[7]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Moonlight%2C%20which%20was%20formerly%20called,from%20a%20commercial%20cloud%20provider)).
* **GamingAnywhere** – bu ham ochiq manbali cloud gaming platformasi bo‘lib, Windows, Linux va macOS tizimlarida o‘yin serveri yaratishni qo‘llab-quvvatlaydi[[8]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=GamingAnywhere%C2%A0is%20an%20open%20source%20cloud,wider%20range%20of%20mobile%20devices). U server va mijoz komponentlarini o‘z ichiga oladi; foydalanuvchi portaldan o‘yinni tanlab, xohlagan vaqtda Internet orqali o‘ynay oladi[[8]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=GamingAnywhere%C2%A0is%20an%20open%20source%20cloud,wider%20range%20of%20mobile%20devices).
* **Open-Stream** – Moonlight texnologiyasiga asoslangan ochiq manbali yechim bo‘lib, NVIDIA va AMD kodlashni qo‘llab, Windows, macOS va Linux platformalarida ishlaydi[[9]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Open,gamers%20designing%20a%20gaming%20platform). U soddalashtirilgan oʻrnatish va ko‘p qo‘llab-quvvatlanadigan qurilmalar (Windows, macOS, Linux, iOS, Android) uchun qulay interfeys bilan ta’minlangan[[10]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Open,gamers%20designing%20a%20gaming%20platform).

## Tijorat va boshqa yechimlar

Bulutli oʻyin uchun shuningdek tijorat (yopiq kodli) yechimlar ham mavjud. Masalan, **Parsec** – bepul taqdim etiladigan tijorat chat ishlovchi dastur boʻlib, foydalanuvchilarga istalgan qurilmada yuqori sifatli o‘yin oqimini uzatadi[[11]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Parsec%C2%A0is%20a%20free%2C%20proprietary%20solution,The%20tool). Parsec 60 kadr/s gacha oqimni va o‘zining peer-to-peer tarmog‘i orqali kam kechikishni kafolatlaydi[[11]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Parsec%C2%A0is%20a%20free%2C%20proprietary%20solution,The%20tool). Bundan tashqari, **Steam Remote Play (Steam Link)** va **Rainway** kabi xizmatlar ham mavjud, ammo ular yopiq kodli boʻlib, o‘z server infratuzilmasini taklif etadi.

## Texnik tavsiyalar

* **GPU va kodlash texnologiyalari:** Oqim uzatishda videokodlovchi (hardware encoder) ishlatish lagni kamaytiradi. Masalan, Sunshine ochiq kodli server dasturi NVidia NVENC yoki AMD/Intel video kodlash chiplariga tayanib, past kechikishli streamingni ta’minlaydi[[5]](https://github.com/LizardByte/Sunshine#:~:text=%E2%84%B9%EF%B8%8F%20About). Shuning uchun AWS ning GPU’li instansiyalaridan (masalan, NVIDIA T4, A10, yoki G4dn juftliklari) foydalanish tavsiya etiladi.
* **Server joylashuvi va tarmoq:** Ilgari serverni foydalanuvchilarga yaqin joylashgan mintaqaga (region) joylashtirish pingsiz o‘yin tajribasini yaxshilaydi. Shuningdek, keng polosali va past kechikishli internet ulanmasini tanlang. Sunshine kabi yechimlar eng qulay o‘yin tajribasi uchun «eng past kechikish»ni maqsad qilgan[[12]](https://app.lizardbyte.dev/Sunshine/#:~:text=).
* **Automa­tlashtirilgan ishga tushirish:** Cloudy Pad yordamida oʻyinlarni Steam yoki Lutris orqali ishga tushirish mumkin[[3]](https://github.com/PierreBeucher/cloudypad#:~:text=,Cloud%2C%20Azure%2C%20Scaleway%20or%20Paperspace), bu veb-saytdagi “play” tugmasini bosganda o‘yinni avtomatik ishga tushirishni yengillashtiradi. Shuningdek, Sunshine serveriga skript yozib, foydalanuvchi sessiyasi boshlanganda kerakli oʻyin jarayonini yoqish mumkin.
* **Sessiyalarni izolyatsiya qilish:** Har bir foydalanuvchi yoki jamoa uchun alohida virtual mashina yoki konteyner ajratish maqsadga muvofiq. Bu orqali har bir sessiya mustaqil ishlaydi va foydalanuvchilar o‘yinlarni o‘zlariga ajratilgan resurslarda xavfsiz tarzda ijro etadi.
* **O‘yin portallari va akkaunt integratsiyasi:** Ko‘pgina yechimlar Steam, Epic yoki GOG kabi xizmatlardagi akkauntlaringizdagi o‘yinlarni qo‘llab-quvvatlaydi. Masalan, Cloudy Pad’da o‘yinlarni Steam yoki Lutris orqali ishga tushirish mumkin[[3]](https://github.com/PierreBeucher/cloudypad#:~:text=,Cloud%2C%20Azure%2C%20Scaleway%20or%20Paperspace). Agar foydalanuvchi o‘yin hisobiga ega bo‘lmasa, odatda platforma (o‘z portal dasturiy ta’minoti) orqali hisob olish jarayonini tashkil qilish lozim.
* **Mijoz qurilmalar:** Sunshine/Moonlight klentlari Android, iOS, Windows, macOS va Linux tizimlarida ishlaydi[[7]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Moonlight%2C%20which%20was%20formerly%20called,from%20a%20commercial%20cloud%20provider). Bu esa foydalanuvchilarga kompyuter, noutbuk yoki mobil qurilmalardan o‘yinlar oqimini qabul qilish imkonini beradi.

Ushbu yechimlar va texnik tavsiyalar yordamida AWS, GCP yoki boshqa bulut serverlarida kam lagli, tezkor streamingga ega bulutli oʻyin xizmatini tashkil qilish mumkin. Har bir platforma turli kuchli va zaif tomonlarga ega, shuning uchun sizning ehtiyojingizga mosini tanlab, uni sozlash lozim.

**Manbalar:** Yuqorida tilga olingan yechimlar haqida ma’lumot platformalarning rasmiy hujjatlari va GitHub sahifalaridan olindi[[1]](https://nestri.io#:~:text=Nestri%20is%20an%20open,on%20your%20own%20GPU%20instance)[[5]](https://github.com/LizardByte/Sunshine#:~:text=%E2%84%B9%EF%B8%8F%20About)[[8]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=GamingAnywhere%C2%A0is%20an%20open%20source%20cloud,wider%20range%20of%20mobile%20devices)[[6]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=software%20package%20include%3A)[[13]](https://github.com/PierreBeucher/cloudypad#:~:text=Cloudy%20Pad%20is%20a%20Free%2C,machine%20or%20a%20costly%20subscription)[[11]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Parsec%C2%A0is%20a%20free%2C%20proprietary%20solution,The%20tool).

[[1]](https://nestri.io#:~:text=Nestri%20is%20an%20open,on%20your%20own%20GPU%20instance) Nestri – Your games. Your rules.

<https://nestri.io>

[[2]](https://github.com/PierreBeucher/cloudypad#:~:text=Cloudy%20Pad%20is%20a%20Free%2C,machine%20or%20a%20costly%20subscription) [[3]](https://github.com/PierreBeucher/cloudypad#:~:text=,Cloud%2C%20Azure%2C%20Scaleway%20or%20Paperspace) [[4]](https://github.com/PierreBeucher/cloudypad#:~:text=,Automatically%20shutdown%20inactive%20instances) [[13]](https://github.com/PierreBeucher/cloudypad#:~:text=Cloudy%20Pad%20is%20a%20Free%2C,machine%20or%20a%20costly%20subscription) GitHub - PierreBeucher/cloudypad: Free, Open Source alternative to GeForce Now, Blacknut and similar Cloud Gaming platforms. Deploy your own gaming gear in the Cloud ! ⛅

<https://github.com/PierreBeucher/cloudypad>

[[5]](https://github.com/LizardByte/Sunshine#:~:text=%E2%84%B9%EF%B8%8F%20About) GitHub - LizardByte/Sunshine: Self-hosted game stream host for Moonlight.

<https://github.com/LizardByte/Sunshine>

[[6]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=software%20package%20include%3A) [[7]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Moonlight%2C%20which%20was%20formerly%20called,from%20a%20commercial%20cloud%20provider) [[8]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=GamingAnywhere%C2%A0is%20an%20open%20source%20cloud,wider%20range%20of%20mobile%20devices) [[9]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Open,gamers%20designing%20a%20gaming%20platform) [[10]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Open,gamers%20designing%20a%20gaming%20platform) [[11]](https://mac.eltima.com/open-source-cloud-gaming/#:~:text=Parsec%C2%A0is%20a%20free%2C%20proprietary%20solution,The%20tool) Open source cloud gaming software and other free solutions

<https://mac.eltima.com/open-source-cloud-gaming/>

[[12]](https://app.lizardbyte.dev/Sunshine/#:~:text=) Sunshine | LizardByte

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