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The power of in-game voice chat

Tencent Cloud on the impact in-game voice chat can have, and how its Game Multimedia Engine can help

Tencent Cloud

Video games are, by their very nature, a social experience.

They're something that people like to play together, be that sitting next to each other on the sofa or – more commonly, today – online. In order to play together, users need to be able to communicate digitally. While this can be done with text chat, that's not as immersive or as convenient as simply talking.

Voice chat is natural; it not only allows players to focus on the game but also keeps their hands free to use their controller, mouse and keyboard, phone or whatever hardware they are using. This method of communication also means that consumers don't need to step out of the experience or stop what they are doing in order to type out a message.

Over 90% of Chinese gamers prefer to interact with other players in an experience, according to research from Tencent Cloud. 90.6% of consumers use the built-in voice chat function when playing a game, with 38.4% saying that they use the voice chat function often. When a title doesn't have an in-game voice communication system in place, 73.7% of these players say that they turn to a third-party service instead.

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Data from chat platform Vivox also shows that people who use in-game voice chat play games not only more, but also more often than those who do not.

Globally, voice chat within video games has grown massively in popularity in recent years. Perhaps the most ubiquitous platform in the market right now is Discord, which has managed to attract over 250 million users between its 2015 launch and May 2019. As of the end of 2020, the company boasted at least more than 140 million monthly active users, double the engagement it had 12 months prior.

While this growth was no doubt aided by people wanting to communicate and connect with people during the corona virus pandemic lock downs, as opposed to purely playing games, it does speak to the modern tendency to want to use voice chat to engage with people online.

With online worlds becoming increasingly prevalent – and as talk of the metaverse builds – giving users the ability to communicate using voice chat is of utmost importance. The massive success of titles like Fortnite, Roblox and Among Us show that people not only want to spend time playing games; they want to do so with other people.

Video games are no longer products that people spend time with with intention of playing; they are places that users head towards to socialise, to hang out with friends. Titles like Fortnite are a digital destination not dissimilar to shopping malls or playgrounds. As a result, it's vital that developers and publishers give players the tools to communicate as naturally as possible. The most obvious way of doing this is by implementing voice chat into their games.

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Finding Your Voice

Of course, there are some challenges that might put developers off building voice chat into their projects.

For one, due to the number of voice chat services out there, the quality that consumers expect from such a service is incredibly high. They won't stand for long and noticeable latency times, nor will they be happy with connection problems that cause audio to freeze.

Depending on the type of game, having positional audio is also vitally important. This allows a player to know what direction their friends or foes are in relation to them; something that can mean life or death in genres like battle royale. Either not having this kind of functionality in your game's voice chat – or it being present, but implemented poorly – will likely result in frustration from users and has the potential to stop them from playing altogether.

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Developers might also be cautious about building their own voice chat systems for games that are cross-platform due to the additional work that this might bring with it. For example, creating voice chat for Sony's new PlayStation 5 console – and making sure it works – is different to making sure your system works with the numerous Android mobile phones that are out there in the wild. Making sure that these different platforms can communicate properly with one another introduces a wealth of additional frustrations, too.

Similarly, the global nature of online video games means that there is pressure on developers to make sure that whatever systems they implement in their games work around the world. Transmitting anything from one side of the planet to the other comes with its challenges and audio is no exception. As mentioned already, users want voice chat that is free of lag and with quality that never drops. That's without mentioning the localisation work required to make sure your service is optimised and easily understandable by players from every corner of the world.

Users want voice chat that is free of lag and with quality that never drops

All in all, while creating your own in-game voice chat solution is undoubtedly worth it, doing so not only comes with a huge number of pitfalls but can also be a huge cost to developers, in terms of both time and money. Thankfully, there are ready-to-use solutions out there, such as Tencent Cloud's Game Multimedia Engine (GME).

A Sound Solution

This product from Tencent Cloud solves a lot of the issues that developers might have with implementing voice chat within their games.

GME boasts a number of features that make sure that voice chat is crystal clear. For one, it reduces latency to just 400ms in average and players can still communicate over weak internet connections – ones that see more than 70% packet loss and 1,500 ms of network jitter. That's on top of a number of patented algorithms that cancel out both echo and ambient sound resulting in clear high-definition audio.

GME boasts a number of features that make sure that voice chat is crystal clear

In addition, GME has deep integration with Wwise sound engine to make sure that game sound effects are not lost when players are using in-game voice chat. This means that rather than, for example, weather effects drowning out what is being said, this audio is actually integrated into voice chat to create an immersive experience.

The Game Multimedia Engine is also easy to implement on a variety of different games platforms. It's optimized for engines including Unity and Unreal and also comes with software development kits (SDKs) for consoles, including the newly-launched PlayStation 5 and Xbox Series X/S machines, in addition to PS4, Xbox One and Nintendo Switch. That's on top of optimization for Windows and MacOS, as well as iOS devices and more than 2,000 different phones running Google's Android operating system.

Not only does this mean that it's easy to use GME on a huge variety of hardware, but it will be a consistent experience across these different devices. In short, this will save developers a huge amount of time and effort in tweaking code to support as much hardware as possible.

It's also stable and reliable. GME is already used by thousands of industry customers around the world whose users collectively – on average – talk for about one billion minutes every day in voice calls. By using GME, developers and publishers not only save themselves the hassle of creating a voice chat service within their game; they are also spared the pressure of having to handle any problems that might arise. Tencent Cloud has real-time monitoring, remote disaster recovery and smart scheduling to make sure its service is always up and running. As a result, it has a crash rate of below 0.01%.

GME clients also benefit from having 24/7 customer support to ensure any problems that arise can be dealt with quickly. The platform has a simple API design which means that developers and publishers can quickly integrate GME voice chat into their games using just four lines of code. By using GME, you are saving huge amounts of time and money that would have otherwise been wasted on creating your own voice chat; you are also buying peace of mind that even if there are problems with the platform, they can quickly be taken care of by GME's customer service team.

There are a growing number of reasons why developers and publishers should look to integrate voice chat into their games, but doing so themselves can introduce a huge degree of risk into the equation. Companies could not only spend huge amounts of time and money building said solution, but they will also need to invest in maintaining this service once it is live.

GME not only eliminates the risks involved in developers creating their own voice chat systems, but gives them more time to focus on actually building their project without the headache of worrying about this hugely important but potentially troublesome feature.

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Case Study

Sausage Man

Sausage Man

With its cute aesthetic and chaotic battle royale gameplay, Sausage Man published by XD Entertainmen has attracted millions of players around the world since it made its debut in China back in 2017.

As with any last-man-standing title, success depends upon quick reflexes and decision making, something that is made much easier with robust communication between teammates. As a result, the development team chose to go with GME for Sausage Man.

Sausage Man from XD Entertainment has attracted millions of players around the world since it made its debut in China back in 2017

"For a mobile game with shooting as the core gameplay, players need to share information and exchange tactics conveniently and effectively, so there is a very high demand for real-time voice chat," the development team told us.

"The real-time voice chat service of the GME team is a mature game real-time communication solution in China. The needs of Sausage Man and the strengths of GME perfectly matched."

While voice chat is an important part of the Sausage Man experience, it was something that the the development team knew they didn't have the skillset to make. To do it themselves would require time and effort that they did not have, so it made sense to turn to an industry partner like Tencent Cloud so that the developers could focus on their priority; making a solid video game.

"The real-time voice solution and the core gameplay have a relatively low relationship, which means the game team often heavily focus on the design and development of the core gameplay, and the game team's demand for customized development of in-game communication is relatively low," the development team explains.

"So, an industry-standardized solution can meet our needs. Additionally, the real-time voice chat function requires a high level of technical accumulation in the audio field, and our team currently does not have this ability. It is costly to hire staff with expertise in this field."

As well as saving the development team a lot of effort before release, teaming up with GME has also been beneficial after the fact. Tencent Cloud handles a lot of the technical support work that would otherwise take up a lot of man-hours at the developer. But that's not all the company does.

"GME helps us to identify harmful content in audio content," the development team says. *"That lets us build a healthy community."*

The development team says that companies can very much rely on Tencent Cloud to help out with any specific problems that they are having.

"If you encounter technical problems in the process of implementing the GME solution, you must communicate timely with the GME team," the development team explains.

"Feel open and free to communicate with them, and this can help you save a lot of time and energy."

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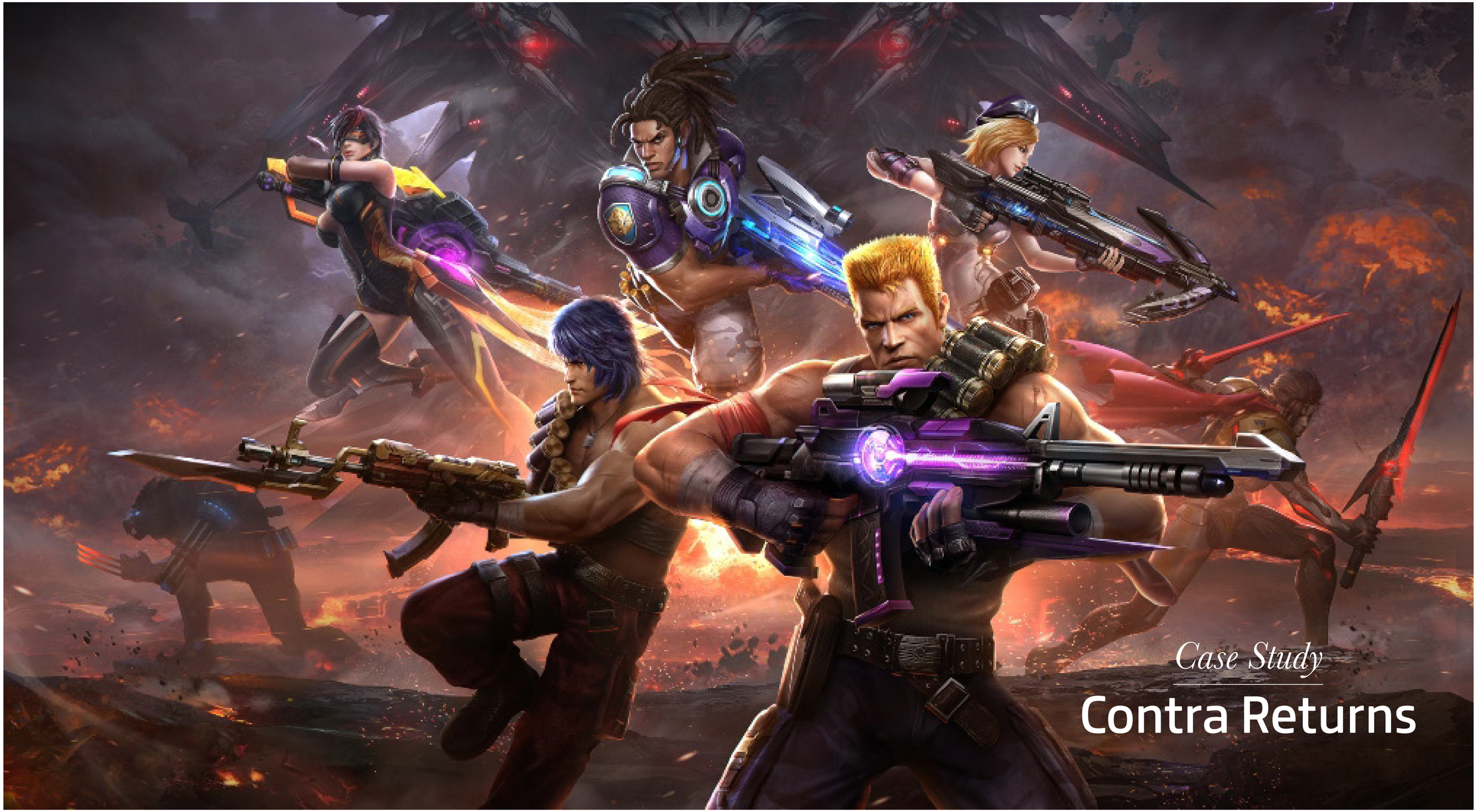

Case Study

Contra Returns

Contra Returns

For the enhanced remake of Konami's classic arcade title Contra Returns, developer Tencent Games opted to use GME to enable players to communicate with one another.

Initially released in China back in 2017, the game came to Taiwan in 2018 ahead of a beta launch in North America, Latin America and Europe in July 2021. Given the title's initial rollout in China, partnering with a local company like Tencent Cloud was a logical decision, but the platform's global capabilities meant that this working relationship could continue around the world.

Contra Returns is an action-filled multiplayer game that requires users to work together; being able to speak to other players is, therefore, something that the developer logically wanted to implement.

"Voice chat can improve the communication efficiency between players, which has a great impact on the social atmosphere in the game," Tencent Games explains.

"GME can provide a variety of voice service support for the game."

The variety of functionality that GME provides is perfectly suited to the different gameplay modes featured in a title like Contra Returns. The project has players going up against other users, as well as computer-controlled opponents in the environment meaning that the game's audio needs to support a variety of different threats.

"The real-time voice chat function is widely used in the product, which can be adapted to the PVP (player versus player) and PVE (player versus environment) activities of teaming up in the game," Tencent Games says.

"Players can communicate smoothly with players while playing intensely in the game."

Of course, Tencent Games could have built its own in-game voice chat solution for Contra Returns, but due to the amount of effort it would require from them to make this themselves, the developer decided to turn to an off-the-shelf option like GME.

"It is very difficult to develop and deploy voice chat services by implementing voice functions by ourselves," the studio said.

"Contra Returns is published globally, with a large number of players around the world."

Being a global title, GME was also a perfect fit for Contra Returns. The in-game chat solution benefits from Tencent Cloud's robust server infrastructure around the world, not only meaning that GME worked no matter where players were, but the Tencent Cloud team was able to match where the game became popular. This gave Tencent Games a great deal of flexibility.

"The GME team gave special support based on the project situation," Tencent Games says.

"For example, Contra Returns is expected to have more users in Latin America, and GME added local network deployment support for the game."

All in all, Tencent Games is glad it partnered with Tencent Cloud to implement GME in Contra Returns. In doing so, the studio not only saved a lot of time, money and effort building in-game chat; it also meant that the developer could focus on the title rather than buying additional servers to meet demand.

"GME is a wonderful game voice chat solution, covering comprehensive functions and scenes," Tencent Games concludes.

"And the flexible and fast implementation or access of GME saves us a lot of costs in development and implementation."

The variety of functionality that GME provides is perfectly suited to the different gameplay modes

Tencent Cloud team was able to match where the game became popular. This gave Tencent Games a great deal of flexibility

How does GME work?

How does GME work?

Game Multimedia Engine (GME) is Tencent Cloud's end-to-end voice over IP (VOIP) service, which allows users to communicate from anywhere in the world. This solution is not only scalable but also cost-efficient and provides high-quality voice communications.

It's popular, too, boasting around 6,000 gaming customers with users talking for a total of 1 billion minutes each and every day. It's built upon the same technologies that Tencent has used to great success for years now in products such as its QQ and WeChat communications services.

In addition, it uses Tencent's 10-Gigabit cloud-based data centers and 20 BGP lines around the world, including the Middle East, South America, and Australia, which many cloud vendors do not cover. That's on top of third-party data centers, resulting in a smooth experience free from technical issues.

As a result, the service is available in six continents while over 2,800 acceleration nodes have been deployed in over 70 countries to make sure that users have access to a voice chat platform with low latency and lag. Despite being integrated into the game, GME's voice chat uses its own servers rather than those employed by the game itself, which makes the offering much more scalable.

Using echo and ambient sound cancellation, as well as noise and howling suppression, the service also outputs crystal clear HD sound quality. GME's voice latency clocks in at just 400ms for general sound quality.

GME's API is also easy for developers to integrate into their game, too, requiring just four lines of code that specify their credentials to actually use the service. The platform's access deployment and scheduling processes are also those used by Tencent's QQ service. As this is a mature technology that the firm has a wealth of experience with, GME will work as intended even in areas with weak internet, resulting in a 99.9995% connectivity rate.

Thanks to its wide variety of software development kits (SDK), it's easy for a large portion of developers to use. GME has SDKs for popular engines such as Unity, Unreal Engine and Cocos2D, as well as platform SDKs for Windows, macOS, iOS, Android and HTML5.

In addition to supporting a wide variety of hardware – including over 2,000 Android devices – GME supports cross-platform functionality between different services. Developers whose games boast cross-play functionality can use GME to allow players to communicate.

When it comes to voice chatting, GME boasts a number of useful features and modes which make it a versatile system for a variety of different game genres.

For one, using a combination of head related transfer function (HRTF), 3D spacial processing and distance-based EQ compensation methods, GME can create 3D sound for users from non-directional audio. This makes it easy for players to pinpoint where a particular noise is coming from and works even if the recipient only has two speakers.

GME also allows for public messaging, meaning that when users are within a particular range they can hear other users.

There's also command mode, a feature that is perfect for titles where only one person needs to be able to communicate verbally and communicate with players. Other users have the option of interacting with this person, too.

In addition to allowing players to voice chat, GME also enables users to send voice messages. As part of the latter functionality, the service supports speech-to-text chat, which lets users speak naturally and have what they have said turned into a text message with both high quality and accurate voice recognition. Not only is this useful for certain game types, but it also lets developers make their titles more accessible to players with hearing impairments. The service's speech-to-text offering currently supports 125 languages.

Developers can also implement a variety of voice effects for end-users to apply to their voice chats or voice messages, such as Uncle, Horror, Funny, Beautify or Ethereal.

In order to transmit voice chat data, GME collects audio using a mobile terminal collection module before it goes through pre-processing. This sees audio subjected to mixing cancellation, noise reduction and automatic gain control using methods including Acoustic Echo Cancelling (AEC), Automatic Gain Control (AGC) and Active Noise Control (ANC, also known as noise cancellation or suppression). After this, audio is encoded and transmitted.

Thanks to an exclusive voice chat agreement with Audiokinetic, Tencent Cloud's GME also boasts deep integration with the company's Wwise sound engine. For titles using Wwise, this allows GME to perfectly mix in-game audio and voice chat to ensure that players can not only hear their teammates but also what is happening within the game itself.

This kind of functionality is vital for players, not only so that they can easily communicate with other users – especially in chaotic titles with explosions and other loud environmental effects – but also provides a greater sense of immersion.

There are a number of different levels of audio quality at which developers can use, too.

Smooth boasts super-low latency which makes it perfect for multiplayer games like first-person shooters and MOBAs. This tier comes with a 16kHz sample rate as well as a 30kbps bitrate, in addition to using ANS noise reduction.

The Standard sound quality comes with higher sound quality, with the trade-off of having higher latency. This isn't right for quick reflex-intense multiplayer games, but is useful for slower experiences, like board games or titles such as Among Us.

Finally, there's the HD level, a tier that comes with relatively high latency but also higher quality audio. This is perfect for experiences where sound is a key component, like in music or dancing games, or even karaoke.

In addition to sound and audio functionality, Tencent Cloud has also ensured its services is fully GDPR compliant. GME's accounts, resources and other data are all fully isolated from one another and no personal data is collected.

In order to start using GME, all users need to do is register and create the service they need within the Service Management page. From there, developers have to download the appropriate SDK, invoke the APIs and launch GME in their game, after debugging.

When it comes to pricing, voice chat is billed monthly by either voice duration – how long your players spoke for – or what the peak concurrent users were for your voice chat. Meanwhile, voice messaging and speech-to-text are both billed by the number of daily active users that use your service.

If you want to learn more about Game Multimedia Engine, please reach out to our sales team at eucloud@tencent.com. You can also try out a free demo for GME right here.

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