

# Impacts to the Messaging Environment Attributed to RCS

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# Background

- Asynchronous messaging is a preferred form of communication
  - You text before you call
- Voice happens after text
  - “Text first, never leave a voicemail” \*
- First it was 1:1 text, then picture messages and group chat with your phone
- Text (Short Message Service, or SMS) and Group Chat (Multimedia Messaging Service, or MMS) have been supported by the telecommunications carriers since the inception of those services
- Other messaging services grew up around Text and Group Chat
  - Facebook messenger, WhatsApp, etc.
- Rich Communications Service (RCS) is the next standardized messaging service
- Messaging is the service that everyone depends on and no one thinks about until it doesn't work.

\* <https://www.washingtonpost.com/technology/2023/09/25/cell-phone-etiquette-call-voicemail/>

# Text vs. Group Chat vs. RCS

## **Text messages are Short Message Service (SMS) messages**

- SMS allows the user to send a text message of up to 160 bytes to another user and get a notification that the other user received it.
- 1:1 Communication only (messages sent between two recipients)
- SMS Supported in all cellular networks (analog, GSM, CDMA, LTE (via SIP), 5G (SIP, over NAS))
- Used for Person to Person (P2P) communication, Application to Person (A2P), Person to Application (P2A), as well as Machine Type Communication (MTC, aka Internet of Things (IOT))

## **Group Chat messages are Multimedia Messaging Service (MMS) messages**

- MMS allows for longer text messages, pictures, audio files, and video to be shared
- MMS supports 1 or more recipients (Group Chat), 1:Many communication
- Up to 5 MB data payload size (or more)

## **Rich Communications Service (RCS) is a GSMA standardized service that improves on SMS/MMS**

- RCS can be used for Text and Group Chat
- Allow for texts up to 1000 characters in a single SIP message (Pager Mode)
- Large Message Mode pushes media (more efficient than MMS)
- Additional features like typing indicator, name of the chat session, adding and deleting users supported

# Brief History of RCS

## **RCS began as a GSMA standard in 2007**

- Envisioned as a replacement for SMS and MMS
- Plan to support enhanced services via carrier networks (like SMS and MMS)
- GSMA drove the standard, with participation from telecommunications carriers and vendors alike
- Lack of support for RCS in handset clients and requirement of IMS (including a SIP stack on the devices) impacted adoption of RCS
- RCS-e (aka joyn) was launched in Europe, with little success.

## **2015 – Jibe Mobile purchased by Google and Announcement of GSMA RCS Universal Profile**

- Jibe Mobile developed cloud-based server technology as well as a client that could be used on a variety of devices
- Google works with GSMA and in 2016 Universal Profile was defined, helping to address intercarrier RCS issues
- Universal Profile led to broader adoption of RCS, but not anything like SMS and MMS.

## **2019 – Google announces RCS inclusion in Google Messages**

- Provides support for RCS over the top of the operators
- Many operators opt in to Google RCS Hub
- Google Messages updates independent of the Android OS loaded on the device (allowing for updates to devices running on older Android OS releases)

## **2023 – Apple announces support for RCS in iMessage**

## **2024 – Verizon and Samsung announce end of life for their messaging clients, encourage migration to Google Messages**

# Android and iPhone – Messaging in a Garden – 2023 View

- Both Android and iPhone offer enhanced messaging options between users of their products
- Android – RCS (in the Google Messages app)
  - Google purchased Jibe Mobile to bring a richer messaging solution to Android
  - Android devices added RCS as the default service on Android Messages in November of 2019
  - Longer text messages, presence indication, typing indicator, file transfer part of the service
- iPhone – iMessage
  - Apple developed iMessage as the client used on all Apple devices (iPhone, iPad, Mac, Apple Watch, etc.)
  - Enhanced features and tight control of device OS encourage use of the service
    - Blue bubble vs green bubble issue
- For both Android and iPhone, if one or more recipient(s) of the chat or message is on the other device, fall back to SMS/MMS



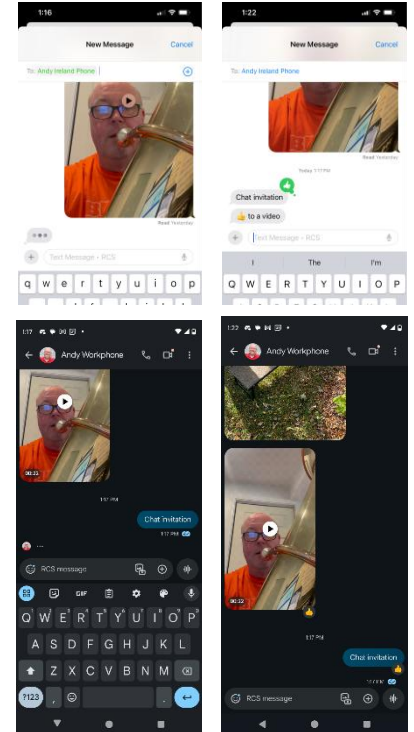
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Apple iMessage icon:  
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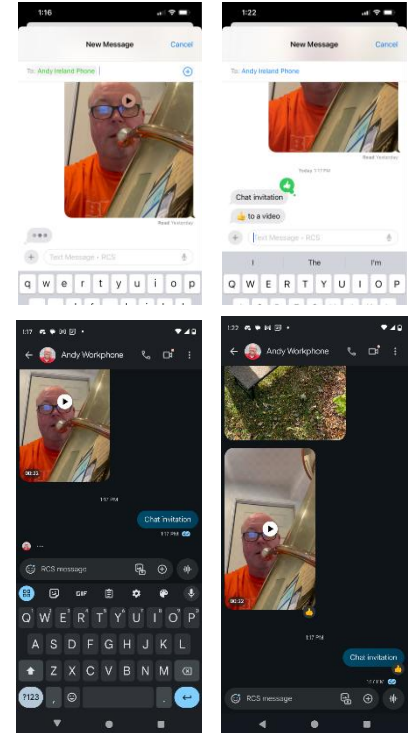
# Android and iPhone – Messaging in a Garden – 2024 View

- iPhone – iMessage and RCS
  - On November 16, 2023, Apple announced support for RCS in the iMessage app in iOS 18.
    - Apple provided further information at WWDC on June 10, 2024, including a public beta of iOS 18
  - Support for RCS enables a richer messaging experience between Android users and iPhone users
    - Higher quality media exchanged
    - Typing indicator supported
  - Blue Bubble/ Green Bubble still indicated in iPhone (not present in Android)
  - iOS 18 public beta available throughout the summer of 2024, launched to iPhone users in September 2024
- For both Android and iPhone, if one or more recipient(s) of the chat or message is not RCS capable, fall back to SMS/MMS



# Android and iPhone – Messaging in a Garden – 2025 View

- iPhone – iMessage and RCS
  - As of June, 2025, 82% of all active iPhones and 88% of iPhones introduced in the last 4 years (iPhone 13 and newer)\*
  - Blue Bubble/ Green Bubble still indicated in iPhone (not present in Android)
  - iOS 26 public beta available throughout the summer of 2025, will be pushed to users through May 2026
- For both Android and iPhone, if one or more recipient(s) of the chat or message is not RCS capable, fall back to SMS/MMS
- Adoption of RCS by iPhone and Android users continues to increase
  - Google Messages is not tied to a specific Android release, alleviating the issue of device support being limited to only certain Android releases

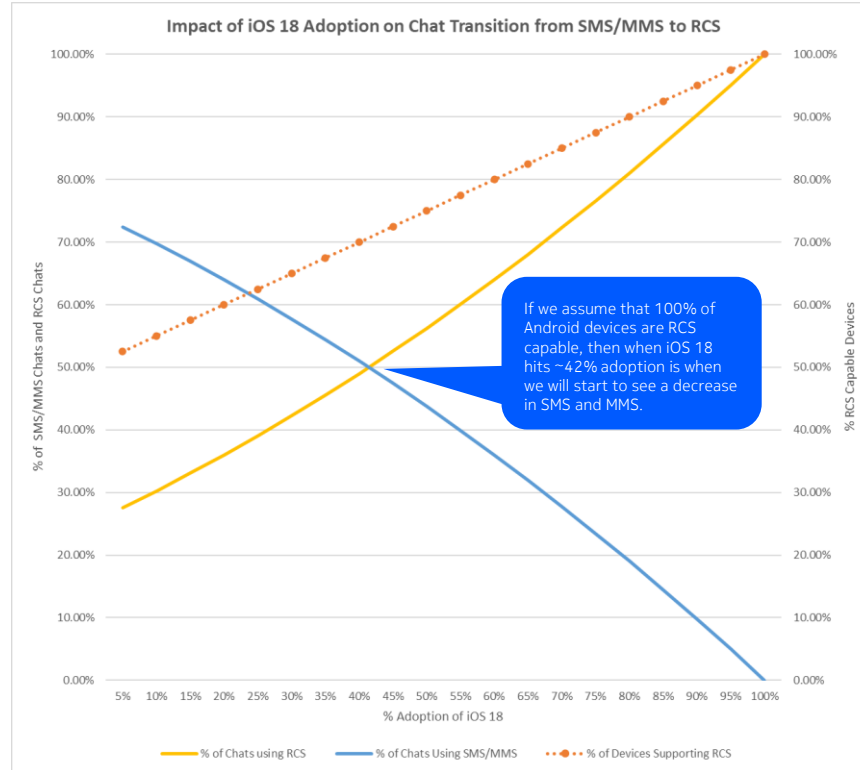


# P2P Chat Transition from SMS/MMS to RCS – 2024 View

## Expected Impacts to SMS and MMS as iOS 18 and RCS are Widely Adopted

- P2P Messaging (Text, Group Chat) will be impacted (esp. MMS)
- To use RCS, all participants must support RCS
  - Otherwise fall back to SMS/MMS
  - Determined by client when originating message
- iOS 18 Adoption directly impacts transition
  - Will be impacted by date when Apple pushes iOS 18 to devices
- Note, the chart assumes support of RCS by 100% of Android devices.

% RCS Support in Android Devices	% iOS 18 Adoption to result in 50% use of RCS by Chat
100%	41.42%
90%	51.42%
80%	61.42%



Per Apple, iOS 17 took ca. 9 months to reach 86% adoption in iPhones  
<https://developer.apple.com/support/app-store/>,  
<https://www.apple.com/newsroom/2023/09/ios-17-is-available-today/>

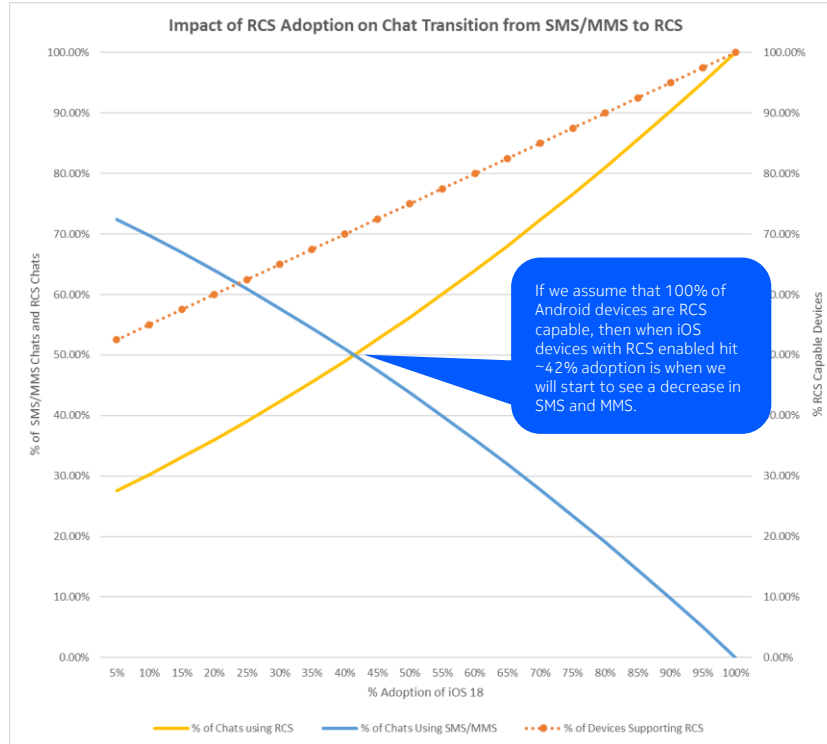
iOS 16 took ca. 9 months to reach 90% adoption in iPhones  
<https://9to5mac.com/2024/06/11/ios-17-adoption-rate/>,  
<https://www.apple.com/newsroom/2022/09/ios-16-is-available-today/>

# P2P Chat Transition from SMS/MMS to RCS – 2025 View

## Expected Impacts to SMS and MMS as iOS 18 and RCS are Widely Adopted

- SMS and MMS traffic have decreased
- SMS appears to have plateaued at a lower level but has stabilized
- MMS traffic has decreased but not cratered
- iOS 18 Adoption directly impacts transition
  - Will be impacted by date when Apple pushes iOS 18 to devices
- Note, the chart assumes support of RCS by 100% of Android devices.

% RCS Adoption in Android Devices	% iOS of RCS Adoption to result in 50% use of RCS by Chat
100%	41.42%
90%	51.42%
80%	61.42%



RCS Adoption is controlled by

- Use of Google Messages or iMessage on iOS 18 or later
- Enablement of RCS in the client

# Additional Push to RCS - Update

- With Google Messages providing a robust RCS experience for users, plus managing the backend servers, there appears to be a push to move to Google Messages
  - Verizon Messages+ was decommissioned in November 2024 (<https://www.verizon.com/support/verizon-messages-faqs/>)
  - Samsung has moved their users to Google Messages on recent devices (<https://www.androidauthority.com/samsung-messages-google-messages-older-phones-3477632/>)
- This will drive up the % of Android users who can enable RCS
- Expect more Android device manufacturers to encourage migration to Google Messages
- Note: RCS is not automatically enabled when migrating to Google Messages
  - User must make the configuration change to enable RCS (Applies to both Android and iOS devices)

# How Will SMS/MMS Services Be Impacted

## SMS

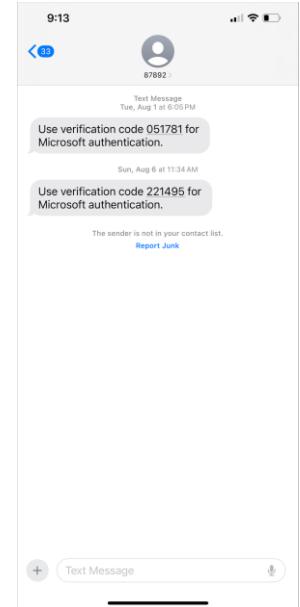
- Impacted
  - P2P messages will be handled via RCS (when available), reducing P2P messaging via SMS
- Non-Impacted
  - Two Factor Authentication
  - Application to Person (A2P) advertisements or interaction (“Text Now to XXXXX to receive more information!”)
  - Wireless Emergency Alerts
    - Back to paging channel text versus traffic channel text

## MMS

- Impacted
  - P2P messages will be handled via RCS (when available), reducing P2P messaging via MMS
- Non-Impacted
  - Group Chat or multimedia messages to users that don’t support RCS

## Additional Interaction with Users as Part of the Business

- Twilio, other companies provide an API to access these services (SMS/MMS)



# Services Still Using SMS/MMS

## Over the Air (OTA) Provisioning of devices

- Accomplished via SMS

## Internet of Things (IOT, aka Machine Type Communication or MTC) devices use SMS for transmitting data and waking up devices

- Inexpensive approach
  - IMS stack addition and integration supporting RCS more expensive than SMS stack
  - RCS call flow more data intensive than SMS
- Decades of deployments
- Sensors, water meters, etc.
  - Things like washers, dryers, refrigerators that have ready access to stable power (and have a higher pricetag) will incorporate a wifi radio and more robust data exchange with the server

## A2P Interactions

- Advertising
- Political Messaging
- Updates on orders from businesses
- Messages from short codes

# Messaging and Programmable Networks

## **Impact to Mobile Networks**

- SMS and MMS will continue to need to be supported in mobile networks
- While P2P traffic is expected to migrate to RCS, A2P, Two Factor Authentication, and SMS over NAS will continue to be carried by the carrier networks

## **A panoply of over-the-top messaging apps and options will continue to exist and grow**

- WhatsApp, WeChat, KakaoTalk, Facebook Messenger, Discord, etc.

## **Network Engineers need to understand the past and work to the future**

- SMSCs and MMSCs will continue to be deployed in operator networks
  - Legacy HW and applications will need to move to more modern architectures (VNF/CNF)
- Moving to a standard service like RCS by the two biggest messaging applications (which can be updated by updating the applications and not the device OS) will allow for quicker rollout of new features going forward

# Summary

- SMS and MMS continue to be important user services
  - Don't turn down those services just yet!
- RCS is moving to become the dominant P2P carrier-based messaging service
- Adoption of RCS by Apple is impacting SMS and MMS use (especially MMS)
- Enterprise messaging, A2P, other services will not be impacted (for now)
- Other messaging applications and services will be unaffected (WhatsApp, Facebook Messenger, WeChat, KakaoTalk, Discord)
- No data to suggest that users are likely to consolidate to a single messaging application
- Users will ultimately benefit from this migration

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