

# Bridging the Gap:

## Ensuring Reliable RTT in Emergency Services with nWise

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# 1. nWise: RTT Enabler Since 2005

nWise has been a leader in Real-Time Text (RTT) since 2005, delivering accessible communication solutions for Emergency Services, contact centers, and telecom networks worldwide. With over 20 years of hands-on experience, we understand both the evolution of RTT standards and the practical challenges of integrating RTT into existing infrastructures.

While many emergency systems in Europe have evolved from voice-only setups, RTT integration often remains complex, particularly for vendors lacking deep RTT expertise. SMS and chat, once added as separate components, are no longer sufficient. Recent implementations have shown that without a strong grasp of RTT behavior in real-world networks, issues become harder to detect and resolve, increasing the risk of delays and instability.

The **nWise RTT Bridge** is purpose-built with Real-Time Text at its core: unlike retrofitted solutions, it offers a stable and integrated approach, drawing on decades of specialized experience. Our solution is designed specifically to layer RTT functionality onto existing 112 systems without disrupting voice infrastructure. This ensures RTT continuity during transfers and conferences, solves signaling and media gaps, and supports full compliance with **RFC 4103** and **RFC 9071** standards, making implementation smoother, more reliable, and future-proof.

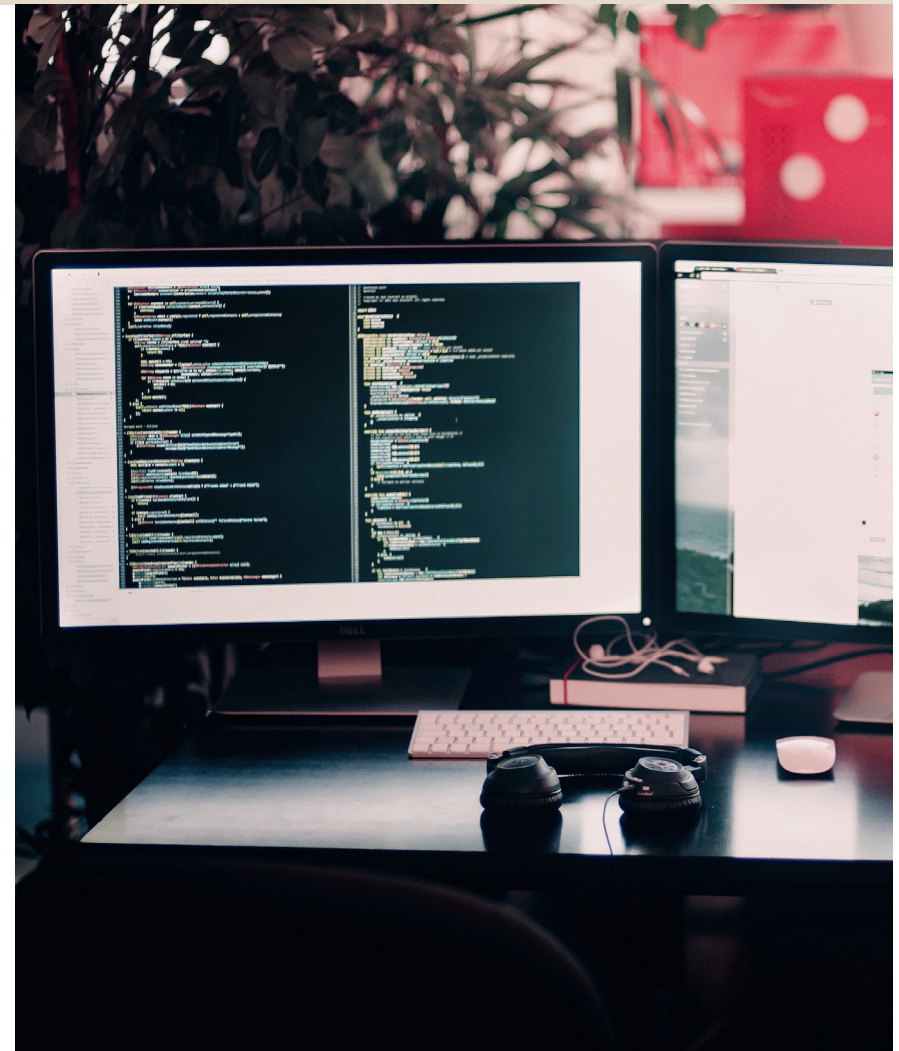


## 2. Why nWise RTT Bridge is Necessary

Bridging is used in NG112 infrastructures to transfer calls and conduct conferences. nWise RTT Bridge has a signalling interface to create and maintain conferences and media mixing capability. Moreover, nWise RTT Bridge is necessary to transfer a call because IP-based devices normally cannot mix media, and transferring always adds the new party (for example, a call taker at a transfer) to the call before the transferor (for example, the original call taker at the which initially answered the call) drops off the call.

### Real-Time Text Standards Supported

- **RFC 4103:** RTP Payload for Text Conversation
- **RFC 9071:** RTP-Mixer Formatting of Multiparty Real-Time Text
- **ETSI TS 103 871:** Emergency Communications (EMTEL); PEMEA Real-Time Text Extension



## Supporting Both Two-Way and Multiparty RTT Communication

Traditional emergency call handling is primarily designed for two-party voice communication between the caller and the call taker. However, emergency situations may require additional participants, such as supervisors, involvement of secondary PSAP services, experts such as nurses, doctors, or if the call needs to be transferred.

- RTT communication must support conference setups where multiple parties can communicate simultaneously.
- RFC 9071 (RTP-Mixer Formatting of Multiparty RTT) provides a framework for mixing RTT streams while maintaining the integrity and readability of text.
- Call handling systems need to support adding new participants dynamically without disrupting the flow of text. This is necessary effectively doing a call handover to another call taker.

The nWise RTT Bridge addresses these complex integration challenges by enabling RTT within existing IP-based infrastructures—without requiring major modifications to Public Safety Answering Points (PSAPs) or emergency control centers.

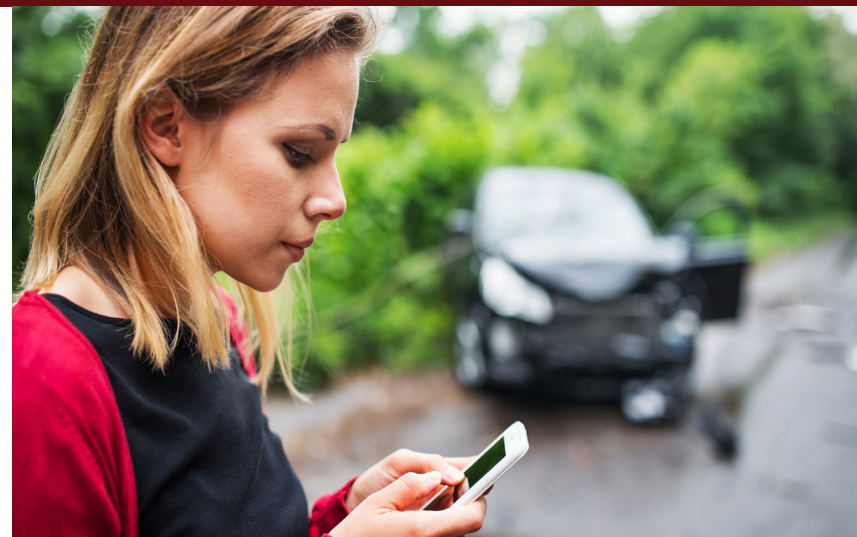
- RTT must be compatible with Next Generation 112 (NG112) architectures.
- The implementation must align with established standards such as RFC 4103 (RTP Payload for Text Conversation), RFC 9071 (Mix Formatting of Multiparty Real-Time Text), and ETSI TS 103 871 (PEMEA Real-Time Text Extension) to ensure interoperability.
- Emergency services must be able to receive and handle RTT calls in the same manner as voice calls, maintaining continuity of service.
- Recording: All sent and received text are saved with time stamps.



# 3. Key Features of nWise RTT Bridge

## Multiparty RTT Support

- nWise RTT Bridge enables users to participate in two-way and multiparty RTT calls without requiring modifications to existing infrastructure.
- Many applications and call-handling platforms are designed primarily for voice conferencing and do not natively support RTT multiparty calls.
- Following RFC 9071, nWise RTT Bridge ensures that RTT streams remain continuous and accessible even when multiple participants join or leave a call.
- RTT bridge manage text stream continuity across call transfers and conferences, preventing RTT from being lost in transitions.



## Flexible Integration and Deployment

- Integration with SIP Environment: nWise RTT Bridge integrates with SIP-based systems, making them compatible with modern IP-based communication networks.
- Integration with non-SIP environment: HTTP - RESTful HTTP API can be used to fetch metrics about the application, create and delete conferences, add, update, and remove participants, send text to all participants in a conference, and more.
- High Availability: Set up with two (2) or more units with failover, load balancing, “active-active” or “active-passive”.

## Carrier Grade

- Extremely reliable: 99.999% availability (“five nines”), which equals about 5 minutes of downtime per year.
- Highly Scalable: Can handle large volumes of traffic and users.
- Redundant and Fault-Tolerant: backup systems are deployed.
- Secure and stable: Built to maintain consistent performance over long periods.

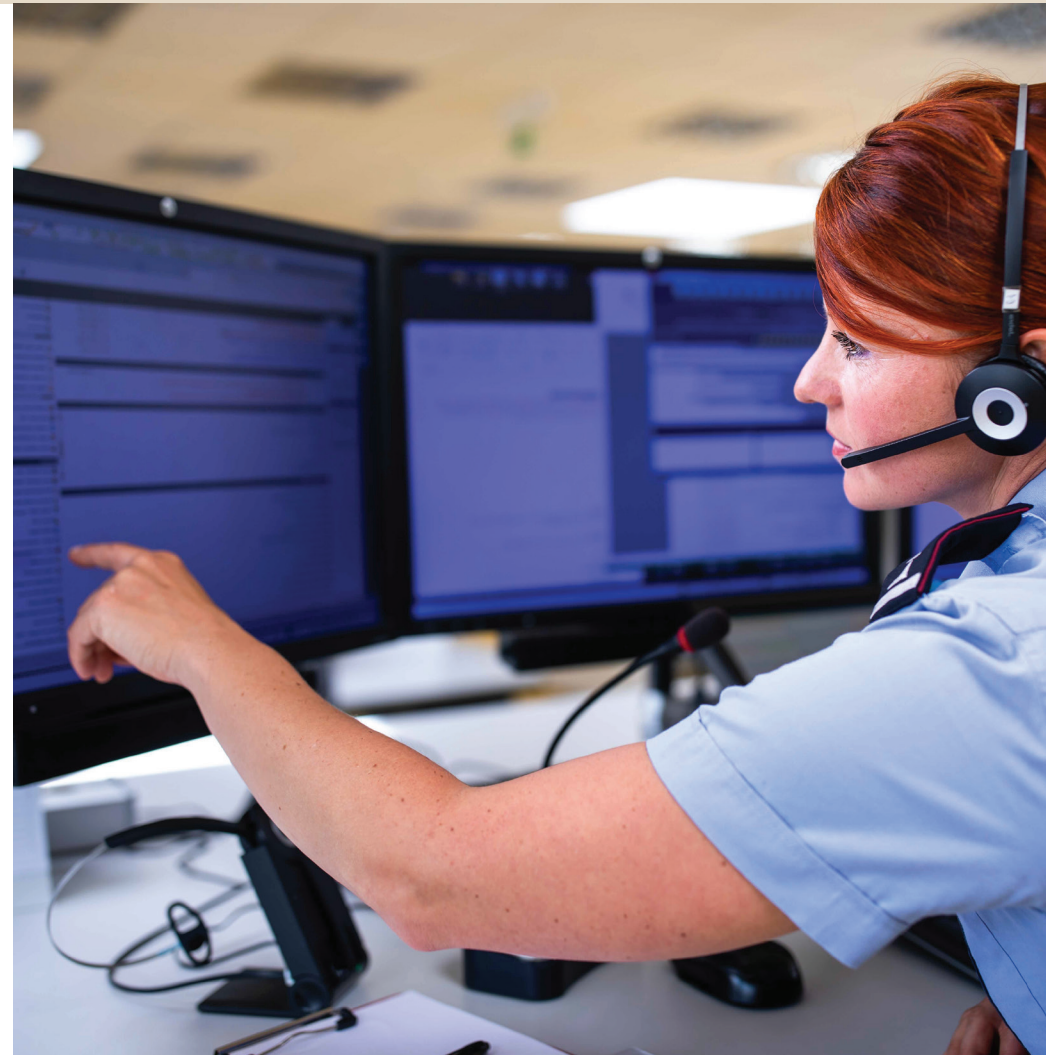
# 4. Bridging in NG112

nWise RTT Bridge plays a critical role in Next Generation 112 systems, particularly for handling call transfers and conferencing in emergency communications. Since IP-based devices cannot inherently mix media, a bridge is required to facilitate smooth call handovers and multi-party interactions.

## Maintaining Call Continuity

- When transferring a call, the bridge adds the new participant before the original call taker disconnects, ensuring no disruption in communication.
- This is especially important for Public Safety Answering Points (PSAPs), where call transfers between different emergency centers must be handled without losing critical information.

By implementing nWise RTT Bridge, emergency services and other communication platforms can ensure full accessibility, continuity, and reliability for all users, regardless of their preferred mode of communication.



# 5. Handling Audio vs. Handling RTT

In voice communication, managing audio streams is a well-established process, allowing multiple speakers to be heard simultaneously in conferences or multi-party calls. However, handling RTT poses a different challenge. Unlike audio, which blends naturally, RTT is a structured text stream that must be organized, synchronized, and properly displayed for all participants.

This is why nWise RTT Bridge does not handle voice media. Instead, we preserve the integrity of the existing voice infrastructure by using it as-is and layering RTT functionality on top. This minimizes the impact on the current infrastructure, reduces the number of test cases and fault scenarios, and ensures a smoother integration process. Our integration complements the existing environment – it does not disrupt it – by adding RTT capability.



## nWise RTT Bridge Maintains Real-Time Characteristics of RTT

- nWise RTT Bridge preserves typing order, ensures correct display formatting, and avoids text collisions when multiple participants are contributing.
- Proper implementation will also synchronize text streams with accompanying voice communication, ensuring accessibility for all users.

## Key Differences Between Audio and RTT Handling

### Managing Audio vs. Managing Text Stream

- Managing audio allows multiple speakers to talk at once, with their voices combined into a single output.
- RTT must be managed differently – text streams need to be kept separate and readable, ensuring that messages remain distinguishable and do not overlap in a confusing way.

### Challenges in Call Routing and RTT Support

- Many existing call routing systems and applications are designed for voice and do not natively support RTT over RTP (as specified in RFC 4103).
- When calls are transferred or bridged, RTT media is often lost if the infrastructure does not explicitly support text session continuity.
- Our solution is aligned with RFC 9071, and therefore it maintains RTT integrity by ensuring proper session management during call transfers and multi-party communication.



# 6. Integration of RTT into Existing Call-Taker Applications



- nWise RTT Bridge enables RTT over WebSockets (ETSI TS 103 871) for Call Taker applications that do not support RTT.
- WebSockets connection details can be included in SIP message headers.
- Some adjustments in the call routing system may be needed to ensure proper header relay in requests and responses.

# 7. Getting it Done!

Ensuring that RTT functions alongside traditional voice communication is crucial for accessibility and compliance with regulatory requirements. The following steps outline key considerations for a smooth integration process:

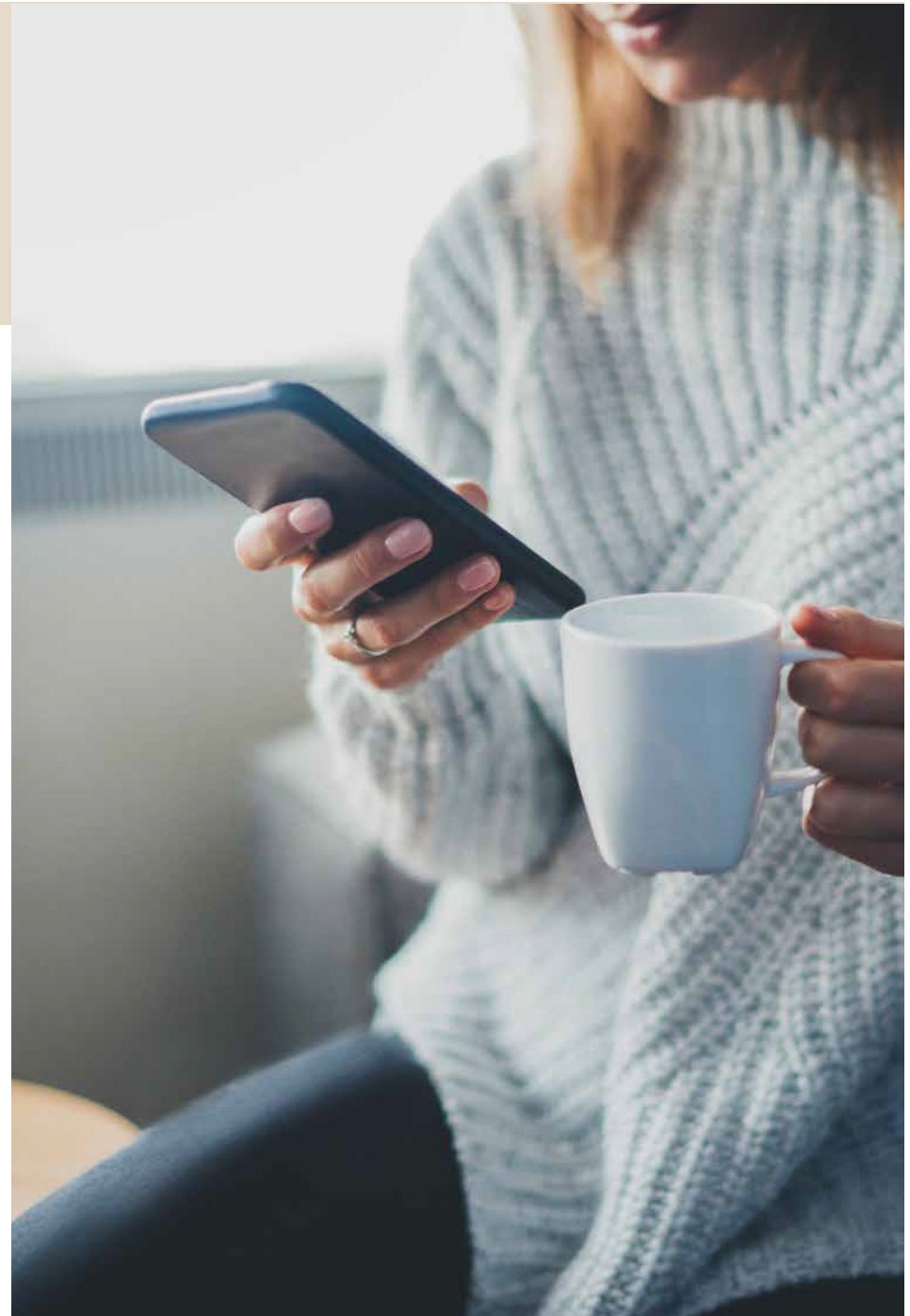
- Integrate two-way and multiparty RTT into an audio-based communication infrastructure without disrupting existing workflows.
- Implement robust RTT conference management to support all types of call scenarios: two-party calls, call transfers, and multiparty calls.
- Prevent RTT data loss in environments where certain network elements or systems do not natively support text media.
- Enable flexible routing of text and audio streams, allowing independent handling when necessary to optimize performance and usability.



## 8. Conclusion

RTT is a crucial component of modern accessible communication systems, particularly in emergency response scenarios. By leveraging **nWise RTT Bridge**, we can integrate Real-Time Text into existing infrastructures without requiring significant modifications to legacy systems. By following standardization efforts, including compliance with **RFC 4103**, **RFC 9071**, and **ETSI TS 103 871**, nWise RTT Bridge ensures that RTT can be implemented reliably and efficiently.

At nWise, we are committed to providing clear, expert guidance on overcoming the technical challenges of RTT integration while showcasing the implementation of RTT support in existing communication platforms. By adhering to established standards and deploying robust bridging solutions, we guarantee that RTT is as accessible, reliable, and efficient as voice communication in emergency scenarios.



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