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March 4, 2019

**EX PARTE**

Mr. Michael Carowitz
Special Counsel to Chairman Pai
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re:     *Structure and Practices of the Video Relay Service Program*, CG Docket No. 10-51;
        *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with
        Hearing and Speech Disabilities*, CG Docket No. 03-123

Dear Mr. Carowitz:

Following up on our discussion, this letter provides additional details regarding the
concerns of Sorenson Communication, LLC ("Sorenson") with the RUE Profile and VRS Access
Technology Reference Platform ("VATRP").  Sorenson remains very concerned about the
upcoming April 29 deadline for compliance with the RUE Profile and VATRP.  Neither has been
finalized and the deadline fails to account for necessary notice and comment or reasonable
implementation time.  Sorenson also understands that the relevant contractor, MITRE, has been
unable to work on the draft RUE Profile and VATRP since early January.  It will not be possible
for Sorenson or any of the other VRS providers to meet the deadline.

More fundamentally, the scope of the RUE Profile and VATRP endeavor are confused.
If the Commission intends that the VATRP be used solely for interoperability testing, then it
contains many unnecessary provisions that add tremendous cost to implement and maintain with
no apparent benefit.  Yet the VATRP also is not in any way suitable for use by the public, which
calls into question the purpose of the current draft profile distributed by MITRE and the April
deadline.  Sorenson also details the costs to comply with the RUE Profile and why those costs
are not offset by any benefit to consumers.  Finally, Sorenson briefly summarizes how the RUE
Profile development effort has exceeded the Bureau's delegated authority.

Sorenson and the other VRS Providers filed a petition seeking suspension of the
upcoming April 29 deadline.[1]  But beyond a suspension of the deadline, Sorenson urges the

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[1]     Petition of ASL Services Holdings, LLC dba Global VRS, CSDVRS, LLC dba ZVRS,
        Convo Communications, LLC, Purple Communications, Inc., and Sorenson
        Communications, LLC for Waiver of the RUE Profile and Video Access Technology
        Reference Platform Implementation Deadline, CG Docket Nos. 10-51 & 03-123 (filed Feb. 8,
        2019).

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Commission to pause to consider the goals of the VATRP and RUE Profile project and whether the project is cost-effective in light of improvements that the providers have made to VRS interoperability over the last several years.  In this regard, the Consumer Groups agree that a pause in VATRP and RUE Profile implementation would allow the Commission and industry to focus resources on those efforts that would bring tangible benefits to VRS consumers: encryption, 911 geolocation, and skills-based routing, among others.[2]  Indeed, MITRE already has a process for quarterly interoperability testing.  In the latest reports that Sorenson has seen, this manual process is achieving its goal and MITRE's National Test Lab has reported a very high level of VRS interoperability.[3]  (The Commission has full access to this report, while the providers are limited to only their own results.)  Given these results, and the costs and risks detailed below, Sorenson urges the Commission to pause the project to evaluate the scope and its costs and benefits before continuing to divert provider and Fund resources in unnecessary and possibly even harmful ways.

**I.      The VRS Providers Cannot Meet the April 29, 2019 Deadline To Implement the RUE Profile and Interoperate with the VATRP**

The April 29 deadline[4] to comply with the RUE Profile and VATRP is an impossibility at this point.  First and foremost, there is no final RUE Profile to implement.  The RUE Profile has been in flux since last July.  MITRE worked on the draft until January, at which point Sorenson understands that it was unable to continue.  Sorenson also understands that MITRE provided a draft to the Commission staff for review, but there are still many steps before the RUE Profile is finalized.

Per the Bureau's own requirements, before any standard may be adopted or updated, it must be made available for notice and comment.  After evaluating the record and adopting an order addressing the standard, the Bureau must release a public notice establishing an

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[2]     *See* Letter from Tamar Finn and Danielle Burt, Counsel for Telecommunications for the Deaf and Hard of Hearing, Inc., on behalf of National Association for the Deaf, Cerebral Palsy and Deaf Organization, Deaf Seniors of America, and Rehabilitation Engineering Research Center on Technology for the Deaf and Hard of Hearing, to Marlene H. Dortch, Secretary, FCC, CG Docket Nos. 10-51 & 03-123, at 2 (filed Oct. 31, 2018).

[3]     If there are any remaining interoperability issues with the industry's smallest provider, they are being addressed through other Commission action.  *See ASL Services Holdings, LLC dba GlobalVRS*, File No.:  EB-TCD-15-00020482, DA 19-28 (Enf. Bur. rel. Feb. 1, 2019).

[4]     *See* 47 C.F.R. § 64.621(a)(3).  The rule sets the deadline for compliance with the VATRP App and RUE Profile as April 27, 2018, which the Bureau suspended until April 29, 2019. *See Structure and Practices of the Video Relay Service Program et al.*, Order, 33 FCC Rcd. 4042, 4044 ¶ 6 (Consmr. & Gov't'l Affs. Bur. 2018).

implementation schedule.[5]  This process—including time for comment, analysis, and Federal Register publications—will take weeks or months, leaving little or no time before April 29 for implementation.  In addition, the providers have maintained throughout this proceeding that they need one year for implementation once the RUE Profile is finalized.[6]  Even if the Commission disagrees that a full year is necessary, any remaining time before April 29 will be far too little.

Providers could not reasonably have been expected to implement parts of the draft RUE Profile during this time when it has been undergoing changes.  In the first instance, that would be contrary to the requirement for notice, comment, and Bureau approval with an implementation schedule.  In addition, implementing the prior version of the RUE Profile would have been a waste of time and resources.  As of January 2019, fewer than half (41) of the provisions of the July RUE Profile remain unchanged.  At the same time, MITRE has added 39 new provisions to the RUE Profile and modified another 41.  It also removed 16 provisions from the July RUE Profile.  Despite all of these changes, the profile still has large gaps in security and maintainability if the Commission intends it for commercial use.

## II.     The Scope of the RUE Profile and VATRP Aligns with Neither Stated Purpose

The intended purpose of the RUE Profile and VATRP remains unclear, with mixed signals from MITRE and staff.  MITRE has repeatedly stated to the providers that the Commission directed MITRE to build a VRS test tool and associated interfaces to enable the National Test Lab to identify more easily the cause of any interoperability issues.

The content of the RUE Profile, however, is not consistent with using the VATRP only as a test tool.  If testing were the sole purpose at this point, the RUE Profile would be significantly simpler and rather straightforward.  It would not contain requirements to support user features that are not relevant to interoperability.  Nor would the current versions of the RUE Profile and VATRP support use of the VATRP by consumers, either directly or through versions of the

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[5]   *See Structure and Practices of the Video Relay Service Program; Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd. 687, 693 ¶ 17 (Consumer & Gov'tl Affs. Bur. 2017) ("*SIP & RUE Profile Order*"), *pet. for recon. pending*, Petition of Sorenson Communications, LLC for Partial Reconsideration, or in the Alternative, Suspension of the RUE Implementation Deadline, CG Docket Nos. 10-51 & 03-123 (filed May 30, 2017) ("Sorenson Petition for Reconsideration"); 47 C.F.R. § 64.621(a)(3), (c)(2)(i).  Sorenson continues to believe that the original RUE Profile was not lawfully adopted or codified in the Code of Federal Regulations, among other issues detailed in the pending Petition for Reconsideration.

[6]   *See, e.g.*, Comments of Convo Communications, CSDVRS, Purple Communications, and Sorenson Communications, CG Docket Nos. 03-123 & 10-51, at 2, 8 (filed Sept. 14, 2016); Comments of ASL Services Holdings, LLC dba GlobalVRS in Response to Further Notice of Proposed Rulemaking at 7, CG Docket Nos. 03-123 & 10-51 (filed Sept. 14, 2016).

VATRP modified by developers. As detailed below, the current RUE Profile and VATRP introduce a litany of security vulnerabilities that pose tangible risks to VRS users and VRS providers' systems through easy use of the VATRP platform and the use of the RUE Profile for either malicious attacks or novice errors. In the worst case, the current code base could be used for phishing, spoofing, and user data collection. Indeed, other VRS providers have stated on the record that they oppose the VATRP as a soft endpoint, not that they intend to use it as a way to increase interoperability.[7]

If it is the Commission's intent to use the RUE Profile and VATRP App as publicly accessible entry points to VRS systems and require all providers to offer new features as part of the mandatory minimum standards for VRS, the proper process for that is a notice and comment rulemaking. Under the APA, MITRE and a handful of staff cannot dictate new mandatory minimum features that the industry must offer as a condition of providing VRS. New mandatory minimum features could be suggested by a voluntary, consensus standard organization as well, followed by a notice and comment process, but that is decidedly not what is happening here. As described in more detail below, MITRE is not a voluntary, consensus standard organization, and it has no authority to require new features.

## III.     The Costs To Implement the RUE Profile—Including Unnecessary Features— Exceed Any Possible Benefit to Consumers

Sorenson believes that the RUE Profile and VATRP are unnecessary for any purpose, but as currently defined it would be expensive for Sorenson, and presumably others, to implement and maintain.

Two key developments have addressed the interoperability problems that concerned the Commission in 2013. First, the providers have engaged in regular meetings and biannual conferences to prevent interoperability issues and address them promptly when they arise. Their efforts have been successful, as demonstrated through MITRE's own testing of their interoperability. Second, as directed by the Commission in 2013 and detailed by the Bureau in 2017, the providers have implemented the US VRS Provider Interoperability Profile, or "SIP Profile," which was developed through the SIP Forum as a consensus standard. In January 2017 the Commission incorporated this standard into its rules, and in late 2017 the providers completed an expensive, multi-year transition of their endpoints and backend systems to this new standard. The standard has largely eliminated interoperability issues from arising in the first place.

Given these developments, Sorenson believes that the Commission should rethink the necessity of the VATRP as an interoperability testing platform and the need for the RUE Profile.

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[7]     *See* Comments of ZVRS Holding Company, ZVRS, and Purple Communications in Response to Sorenson Petition, CG Docket Nos. 10-51 & 03-123, at 2 (filed Aug. 7, 2017) ("[T]he Commission should reconsider its decision to mandate implementation of the RUE Profile and the ACE App.").

The costs to implement it—as shown here—will not result in commensurate benefits to interoperability.

  – First, for interoperability testing, the National Test Lab needs no other specifications or requirements beyond the SIP Profile.  The providers have already implemented the SIP Profile.  The Lab has a year of proven results using its internal processes and provider testing processes to validate interoperability and provide regular reports to providers and the Commission.  Thus, the incremental value for testing with VATRP would be the value of testing the quality of the VATRP app development.  Neither MITRE nor any other party has shown how the VATRP would be a cost effective solution for resolving an interoperability issue.  Today, only the Commission knows how much has been spent on developing the VATRP endpoint application, but given the currently high levels of provider interoperability, it is reasonable to assume that the costs to develop the VATRP are not justified.

  – Second, the current draft of the RUE Profile contains many features and requirements that are not necessary for interoperability testing.[8]  Even if the RUE Profile did not have these unnecessary features and requirements, Sorenson estimates its costs to implement the RUE Profile for use by MITRE only at approximately **BEGIN CONFIDENTIAL**      **END CONFIDENTIAL**.  This figure represents Sorenson's own costs, and not the costs for the rest of the industry.

  – Third, implementing the RUE Profile as it currently stands would increase implementation costs nearly *by a factor of four*, with no added benefits to interoperability testing and no suitability for public use.  Sorenson estimates that implementing the full RUE Profile and preparing to support the VATRP would cost approximately **BEGIN CONFIDENTIAL**      **END CONFIDENTIAL**.  Again, this reflects only Sorenson's own costs and not the costs for the rest of the industry.  These costs include not only the technical implementation but the development and implementation of new processes to support and manage VATRP customers with user agreements and customer service training.  Maintaining these new systems on an ongoing basis would likely cost an additional **BEGIN CONFIDENTIAL**      **END CONFIDENTIAL** annually.

The attachment to this letter contains an explanation of the requirements unnecessary to interoperability testing and their associated costs.

**IV.     Threats to VRS and Provider Systems if Current RUE Profile Is Meant for Public Use**

Sorenson remains very concerned that the Commission might direct the release of the VATRP App, with its open source code, as a VRS endpoint usable by the general public and

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[8]     *See* Attachment; Joint Providers Oct. 17, 2018 *Ex Parte* & Attach.

available for any person to modify as they see fit.  Distributing the VATRP client as an open source endpoint and requiring by rule that providers support connecting it as a third-party application to their backend systems create a host of issues.  These issues include providing interfaces and code that bad actors could use in attempts to exploit VRS systems, how the VATRP will be updated over time, who will respond to customer support issues, and how the industry will move forward with new market-driven features.  In particular:

– Open source code behind the VATRP means that anyone can manipulate that code and modify it to attempt to exploit VRS providers' systems.  Today, VRS providers prevent unauthorized access through security measures that limit access to their systems to tested and supported endpoints.  The RUE Profile and VATRP, by contrast, create opportunities for bad actors.  For example, the VATRP offers an opportunity for bad actors to use "brute force" methods of discovering customers' passwords and thereby gaining access to their accounts, including their call records and contact lists.

– The RUE Profile *requires* VRS providers to support anonymous calls, which could be used as a platform for robocalling.  In fact, PSAPs have been pushing for elimination of anonymous (i.e. non-service initiated) 911 calls because of the volume of fraudulent 911 calls, and the Commission has a pending rulemaking addressing whether to eliminate the obligation to carry these anonymous wireless 911 calls.[9]

– The RUE Profile and VATRP get out in front of the Commission with use of geolocation for E911[10] at a time when the Commission is currently considering precisely how VRS providers and others should move forward as an industry to improve E911 location-finding.[11]  Geolocation issues for VRS are properly addressed in that context, not by MITRE and a few staff through the RUE Profile.  Moreover, it is not at all clear that any geolocation information generated by the VATRP would be reliable.  For example, the VATRP at present can run only on Windows systems, and desktop computers generally return the location of their IP server, not the location of the user, which can be hundreds of miles apart.

– Releasing the VATRP app to the public raises questions about who is responsible for maintenance and management.  Normally, if a customer is having problems using an endpoint or making or receiving calls, the customer will look to its default VRS provider

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[9] *See 911 Call-Forwarding Requirements for Non-Service-Initialized Phones*, Notice of Proposed Rulemaking, 30 FCC Rcd. 3449, 3450 ¶ 2 (2015) (proposing to sunset the requirement that providers transmit 911 calls from non-service-initiated devices).

[10] *See* January 2019 Draft RUE Profile § 6.2.5.

[11] *See Implementing Kari's Law and Section 506 of RAY BAUM'S Act et al.*, Notice of Proposed Rulemaking, 33 FCC Rcd. 8984, 9010-11 ¶¶ 79-81 (2018); *see also* Comments of Sorenson Communications, LLC, Regarding E911 for Video Relay Services, PS Docket Nos. 18-261 & 17-239 (filed Dec. 10, 2018).

to correct the problem.  The VRS providers, however, will have no insight into the functionality of a specific VATRP app and the specific author may be unknown.  Similarly, if a general flaw in the code is detected, it is unclear who bears responsibility for correcting it or communicating with users that a problem exists and what actions they must take, such as downloading a new version (assuming a new version is created).  The VRS providers will have no ability to perform these tasks, leaving it unclear whether the Commission or MITRE will perform them.  Nor is it clear how the RUE Profile will be updated over time to reflect developments in standards like the SIP Profile.

– VATRP users will lack the same active customer service that Sorenson customers enjoy today.  Sorenson can often repair endpoints remotely to limit customer inconvenience.  Sorenson also routinely uses software error logs to detect patterns or the need for updates.  These features will be unavailable to VATRP users; indeed, Sorenson would be unaware through these methods of large-scale problems with the VATRP.

– VRS providers would have fewer resources to address abusive customer practices.  Today, because the providers have control over the endpoints that connect to their systems, they can take action to prevent abuse when necessary.  For example, today Sorenson can address problems with callers making repeated false and harassing calls to 911 (often requested by the PSAP) without totally deactivating the user's account.  The VATRP does not provide for remote management by providers.

– VRS providers would also be unable to send messages to VATRP endpoints in the event of a service outage.  For example, in the event of a service outage, Sorenson sends automated messaging to its users' endpoints with instructions on how to contact 911 and other services.  Sorenson also notifies the user when the outage has been resolved.  Providers would be unable to provide these messages to VATRP endpoints, leaving its users without critical information.

– Finally, the RUE Profile allows a single user to have multiple simultaneous log-ins with a single VRS provider using the same credentials.  Today, Sorenson assigns a different phone number to each device and logs out all other endpoints using that same phone number.  In Sorenson's case, this allows users and Sorenson to be able to detect cases where a user's credentials may be being misused.  (While this has not occurred, Sorenson's systems would detect it and be able to address it.)  If a single user were logged in from multiple different locations, it could reflect that someone else has stolen that user's credentials.  The RUE Profile, however, *requires* the capability for multiple simultaneous log-ins using the same credentials with no device specific identification.  This could make it more difficult for providers to detect abuses.

These security concerns reflect that the Commission, at a minimum, must not permit the RUE Profile and VATRP to be used as a commercial VRS endpoint.  To do so would jeopardize customer safety as well as the security of other VRS users and VRS provider systems.  No other

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IT or phone system manager would provide direct connections to their systems to unauthenticated, open source apps, and it is unreasonable to require the VRS providers to do so.

**V.     The Bureau's Delegated Authority Extends Only to Standards Developed by a Voluntary, Consensus Standard Organization**

Development of the RUE Profile failed to adhere to the strictures the Commission imposed in the *VRS Reform Order*, and the more recent process to update the RUE Profile suffers from the same problems.  The Commission delegated limited authority to the Consumer and Governmental Affairs Bureau to adopt and update standards:  The Bureau may adopt new standards (after notice and comment) *if* those standards are developed by a voluntary, consensus standard organization.[12]  Neither the original RUE Profile nor the more recent changes were developed by such a group.  Rather, they were developed by the Commission's contractor and staff, which have not conducted a "voluntary, consensus" process.  (Indeed, the Commission directed that staff take the role of "active observer" only.[13])

As a result, the Bureau lacked authority to adopt the original RUE Profile, and it lacks authority to adopt any updates.  Sorenson recommends that, if the Commission chooses to continue the VATRP endeavor, it transfer the development of the RUE Profile to a voluntary, consensus standard organization such as the SIP Forum.

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Sorenson is pleased that the industry came together to fix interoperability issues and that the SIP Profile has provided a common baseline for VRS platforms.  As a result, competition is improved, consumers have a better VRS experience, and providers can innovate with confidence that their innovations will not compromise interoperability.  Sorenson encourages the Commission to rethink its VRS priorities and place the consumers' requests ahead of legacy initiatives like the VATRP and RUE Profile that are solutions in search of a problem that no longer exists.  In all events, the current implementation deadline is an impossibility, and implementation of the RUE Profile will impose wasteful costs with no commensurate benefits. Sorenson encourages the Commission instead to look ahead and focus on the next stages of VRS—encryption, 911 geolocation, and skills-based routing in particular.

Please be in touch with me if you have any questions.

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[12]   *See Structure and Practices of the Video Relay Service Program et al.*, Report and Order and Further Notice of Proposed Rulemaking, 28 FCC Rcd. 8618, 8643 ¶ 49 (2013) ("*VRS Reform Order*"), *vacated in part on other grounds sub nom. Sorenson Commc'ns, Inc. v. FCC*, 765 F.3d 37 (D.C. Cir. 2014).

[13]   *VRS Reform Order* at 8642 ¶ 48.

Respectfully submitted,

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# ATTACHMENT

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**COSTS ASSOCIATED WITH JANUARY 2019 RUE PROFILE REQUIREMENTS NOT NECESSARY FOR INTEROPERABILITY TESTING**

**[[CONFIDENTIAL INFORMATION HIGHLIGHTED IN <mark>YELLOW</mark>]]**

| Section | Requirement | Description | Comments | Development Costs | Annual Maintenance |
|---|---|---|---|---|---|
| **RFCs and Codecs** | | | | | |
| 6 | SIP Signaling | The draft RUE Profile would require providers to fully implement 14 Internet Engineering Task Force Requests for Comment. | The important parts of these RFCs required to provide interoperability have already been implemented per the VRS Provider Interoperability Profile. A requirement to support an entire RFC is not industry standard practice. | | |
| 6.6 | NAT Traversal | Many of the new RFCs relate to NAT Traversal. | These RFCs are not required by the VRS Provider Interoperability Profile. | | |
| 7.2 | Video Codecs | RUE Profile specifies H.265, which is a new video specification. | H.265 is a new video codec specification, which has not yet been implemented into VRS. To the extent it would be required of VRS providers, it is unclear why it should be implemented specifically for the RUE Profile and VATRP. | ■■■■ | ■■■■ |
| 7.3 | Audio Codecs | RUE Profile specifies G.722, which is a new audio specification. | G.722 is a new audio codec specification, which has not yet been implemented into VRS. To the extent it would be required of VRS providers, it is unclear why it should be implemented specifically for the RUE Profile and VATRP. | | |
| 8.1 | Codec Control Messages | This requirements allows a receiver of video to request adjustment to the bit rate of the received video, request key frames, adjust frame time, and address support for the H.271 back channel. | This feature has no bearing on interoperability and is not required by the Commission's rules. | | |

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| Section | Requirement | Description | Comments | Development Costs | Annual Maintenance |
|---|---|---|---|---|---|
| **Security** | | | | | |
| 6.1 | Registration | This provision requires providers to be ready to allow users to log in to VRS systems concurrently with several devices using the same set of credentials, or "multiple simultaneous registrations." | This feature is unnecessary to interoperability testing because the Commission's rules do not require multiple concurrent registrations, and Sorenson does not permit it because of the potential for fraud and use of VRS by unauthorized persons. | | |
| 8 | SRTP & RTCP | This requirement would require providers to implement Secure Real-Time Transport Protocol in all communications with endpoints. | This feature has no bearing on interoperability and is not required by the Commission's rules. Any security issues for VRS should be addressed separately by modifying the SIP Profile in a voluntary, consensus standard organization. | ███████ | ███████ |
| 14 | Security Considerations | This provision requires providers to create specific records for services and to maintain those records when system changes are made. | This is not required by the VRS Provider Interoperability Profile. | | |
| **Contacts** | | | | | |
| 6.2.3 | RUE Contact Information | This feature requires providers to determine from the specifically-formatted header of an incoming VATRP call who the provider of the VATRP is. | For interoperability testing purposes, MITRE is the only relevant provider. Therefore, this provider-identifying feature is not necessary. | | |
| 9.1 | CardDAV Login and Synchronization | CardDAV is a contact server not supported by providers. | Each provider users its own system for contacts. While contacts are portable among providers, there is no reason for all providers to use the same support systems. | ███████ | ███████ |
| 9.2 | Contacts Import/Export Service | Providers must be able to import and export contacts directly via an interface. | The mechanism for exchange of contact information is not relevant to calling between two providers. | | |
| **Call Handling** | | | | | |
| 6.2.4 | Incoming Calls | This requirement mandates that providers send incoming calls to all VATRP apps, simultaneously, that are registered with the same credentials. | Multiple simultaneous registrations are not required by the Commission's rules and are not relevant to interoperability. | ███████ | ███████ |

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| Section | Requirement | Description | Comments | Development Costs | Annual Maintenance |
|---|---|---|---|---|---|
| 6.2.2 | One Stage Dial-Around Origination | This feature allows a user to instruct its default VRS provider to automatically route calls through another provider. | This function is not required by Commission rules for interoperability. | | |
| 6.2.5 | Emergency Calls | The RUE Profile handles emergency calls differently from the Commission's rules. | Emergency calling is not relevant to interoperability, and in all events the RUE Profile should not deviate from the Commission's current E911 rules for VRS. Modifications to the rules will be addressed in the *Kari's Law NPRM* proceeding. | | |
| 6.4 | URI Representation of Phone Numbers | This differs from representation of phone numbers required by VRS Provider Interoperability Profile. | This differs from the VRS Provider Interoperability Profile for no apparent reason. | | |
| 11.1 | RUE Provider Selection | This section prescribes how VATRP users select which provider to use for a particular call | This must be set up specifically for the VATRP as specified in the RUE Profile but is not relevant to interoperability testing. This specifies one-stage dial-around, which is not required by the Commission's rules. | | |
| **Consumer Features and Support** | | | | | |
| 10 | Mail Waiting Indicator | This feature specifies how providers communicate to end users that they have a new video mail waiting. | This feature has no bearing on interoperability and is not required by the Commission's rules. | | |
| 11.2 | RUE Configuration Service | This is a configuration service that would allow users to configure the app specific to their account's settings. | A configuration service is not needed because configuration can be loaded from a static configuration file. Moreover, this is not relevant to interoperability. | | |
| 11.3 | Schemas | Only needed for configuration service. | See item above. | ████ | ████ |
| n/a | Tangential requirements | Implementing new processes and tools in other departments (e.g. methods for customer service to collect agreements, managing users and their credentials, etc.). | To support actual VATRP users, providers would also need to train personnel and establish procedures and protocols for handling customer service and consumer relationships. | | |
| | | | **Total** | ████ | ████ |