IOS SDK Rendezvous Subscribe Failure

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Process

- Client 1: A Rendezvous [R1] is created [client createAnonymousRendezvousWithTag . . .
- Client 1: Subscribes to receive Notifications of any responses to [R1]
- Client 2: Responds to rendezvous [R1]
- Client 1: Receives notification via delegate (didReceiveReponse) of Client2's rendezvous response.

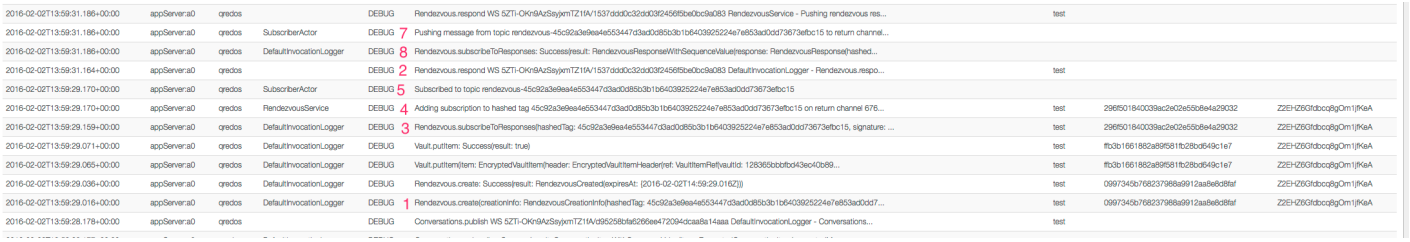
Issue

When this functionality is tested at speed and continuously, an intermittent error is produced where Client 1 doesn't receive the final notification.

In most test runs the error doesn't occur and the following logs similar to the following will be produced on the server

Fig 1 - Successful

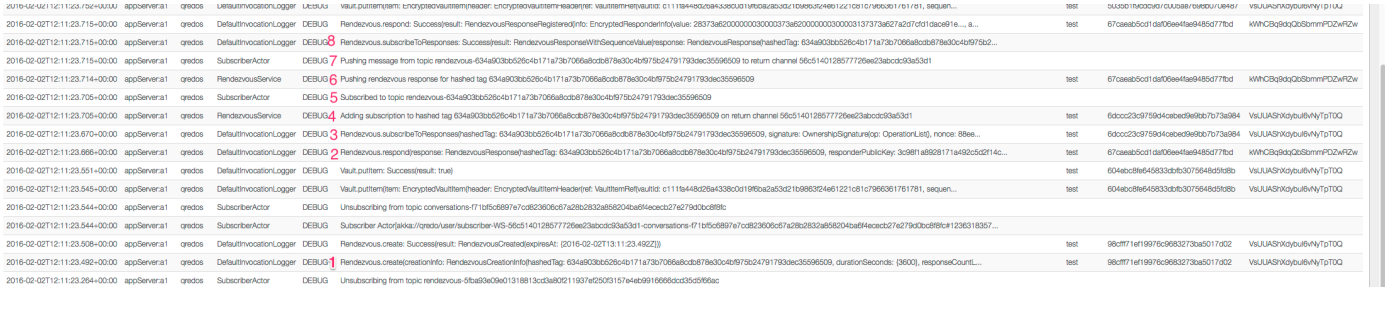
Note #3 Subscribe comes before #2 Respond - which based on the Process above is what you would expect.



2016-02-02T13:59:31.186+00:00	appServer:a0	qredos		DEBUG		Rendezvous.respond WS 5ZTi-OKn9AzSsyjxmTZ1fA/1537ddd0c32dd03f2456f5be0bc9a083 RendezvousService - Pushing rendezvous res...	test			
2016-02-02T13:59:31.186+00:00	appServer:a0	qredos	SubscriberActor	DEBUG	7	Pushing message from topic rendezvous-45c92a3e9ea4e553447d3ad0d85b3b1b6403925224e7e853ad0dd73673efbc15 to return channel...				
2016-02-02T13:59:31.186+00:00	appServer:a0	qredos	DefaultInvocationLogger	DEBUG	8	Rendezvous.subscribeToResponses: Success{result: RendezvousResponseWithSequenceValue{response: RendezvousResponse{hashed...				
2016-02-02T13:59:31.164+00:00	appServer:a0	qredos		DEBUG	2	Rendezvous.respond WS 5ZTi-OKn9AzSsyjxmTZ1fA/1537ddd0c32dd03f2456f5be0bc9a083 DefaultInvocationLogger - Rendezvous.respo...	test			
2016-02-02T13:59:29.170+00:00	appServer:a0	qredos	SubscriberActor	DEBUG	5	Subscribed to topic rendezvous-45c92a3e9ea4e553447d3ad0d85b3b1b6403925224e7e853ad0dd73673efbc15				
2016-02-02T13:59:29.170+00:00	appServer:a0	qredos	RendezvousService	DEBUG	4	Adding subscription to hashed tag 45c92a3e9ea4e553447d3ad0d85b3b1b6403925224e7e853ad0dd73673efbc15 on return channel 676...	test	296f501840039ac2e02e55b8e4e29032	Z2EHZ6GfdbcqBgOm1jfKeA	
2016-02-02T13:59:29.159+00:00	appServer:a0	qredos	DefaultInvocationLogger	DEBUG	3	Rendezvous.subscribeToResponses{hashedTag: 45c92a3e9ea4e553447d3ad0d85b3b1b6403925224e7e853ad0dd73673efbc15, signature: ...	test	296f501840039ac2e02e55b8e4e29032	Z2EHZ6GfdbcqBgOm1jfKeA	
2016-02-02T13:59:29.071+00:00	appServer:a0	qredos	DefaultInvocationLogger	DEBUG		Vault.putItem: Success{result: true}	test	ffb3b1661882a89f581fb28bd649c1e7	Z2EHZ6GfdbcqBgOm1jfKeA	
2016-02-02T13:59:29.065+00:00	appServer:a0	qredos	DefaultInvocationLogger	DEBUG		Vault.putItem{Item: EncryptedVaultItem{header: EncryptedVaultItemHeader{ref: VaultItemRef{vaultId: 128365bbbfbd43ec40b89...	test	ffb3b1661882a89f581fb28bd649c1e7	Z2EHZ6GfdbcqBgOm1jfKeA	
2016-02-02T13:59:29.036+00:00	appServer:a0	qredos	DefaultInvocationLogger	DEBUG		Rendezvous.create: Success{result: RendezvousCreated{expiresAt: [2016-02-02T14:59:29.016Z]}}	test	0997345b768237968a9912aa8e8d8faf	Z2EHZ6GfdbcqBgOm1jfKeA	
2016-02-02T13:59:29.016+00:00	appServer:a0	qredos	DefaultInvocationLogger	DEBUG	1	Rendezvous.create{creationInfo: RendezvousCreationInfo{hashedTag: 45c92a3e9ea4e553447d3ad0d85b3b1b6403925224e7e853ad0dd7...	test	0997345b768237968a9912aa8e8d8faf	Z2EHZ6GfdbcqBgOm1jfKeA	
2016-02-02T13:59:28.178+00:00	appServer:a0	qredos		DEBUG		Conversations.publish WS 5ZTi-OKn9AzSsyjxmTZ1fA/d95258bfa5266ee472094dcaa8a14aaa DefaultInvocationLogger - Conversations...	test			

Fig 2 - Successful

Due to how the servers communicate between different instances, and because the delay is short (0.04 seconds) between #3 & #2, even though the subscribe comes after the respond, this also (surprisingly) works.

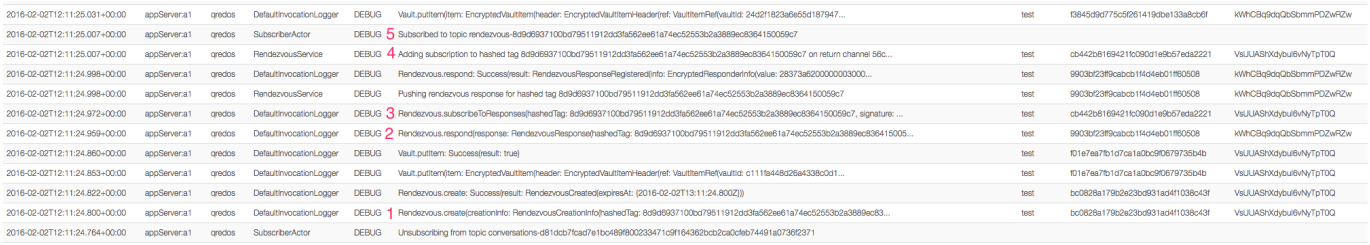


2016-02-02T12:11:23.715+00:00	appServer:a1	qredos	DefaultInvocationLogger	DEBUG		Rendezvous.respond: Success{result: RendezvousResponseRegistered{info: EncryptedResponderInfo{value: 28373a6200000003000037 3a6200000003000037373a627a2d7cfd1dace91e..., a...	test	67caeab5cd1daf06ee4fae9485d77fbd	KWhC8q9dqQbSbmmPDZwRZw	
2016-02-02T12:11:23.715+00:00	appServer:a1	qredos	DefaultInvocationLogger	DEBUG	8	Rendezvous.subscribeToResponses: Success{result: RendezvousResponseWithSequenceValue{response: RendezvousResponse{hashedTag: 634a903bb526c4b171a73b7066a8cdb878e30c4bf975b2...				
2016-02-02T12:11:23.715+00:00	appServer:a1	qredos	SubscriberActor	DEBUG	7	Pushing message from topic rendezvous-634a903bb526c4b171a73b7066a8cdb878e30c4bf975b24791793dec35596509 to return channel 56c5140128577726ee23abcdc93a53d1				
2016-02-02T12:11:23.714+00:00	appServer:a1	qredos	RendezvousService	DEBUG	6	Pushing rendezvous response for hashed tag 634a903bb526c4b171a73b7066a8cdb878e30c4bf975b24791793dec35596509	test	67caeab5cd1daf06ee4fae9485d77fbd	KWhC8q9dqQbSbmmPDZwRZw	
2016-02-02T12:11:23.705+00:00	appServer:a1	qredos	SubscriberActor	DEBUG	5	Subscribed to topic rendezvous-634a903bb526c4b171a73b7066a8cdb878e30c4bf975b24791793dec35596509				
2016-02-02T12:11:23.705+00:00	appServer:a1	qredos	RendezvousService	DEBUG	4	Adding subscription to hashed tag 634a903bb526c4b171a73b7066a8cdb878e30c4bf975b24791793dec35596509 on return channel 56c5140128577726ee23abcdc93a53d1	test	6dccc23c9759d4cabed9e9bb7b73a984	VsUUASNXdybul6vNyTpT0Q	
2016-02-02T12:11:23.670+00:00	appServer:a1	qredos	DefaultInvocationLogger	DEBUG	3	Rendezvous.subscribeToResponses{hashedTag: 634a903bb526c4b171a73b7066a8cdb878e30c4bf975b24791793dec35596509, signature: OwnershipSignature{op: OperationList}, nonce: 88ee...	test	6dccc23c9759d4cabed9e9bb7b73a984	VsUUASNXdybul6vNyTpT0Q	
2016-02-02T12:11:23.666+00:00	appServer:a1	qredos	DefaultInvocationLogger	DEBUG	2	Rendezvous.respond{response: RendezvousResponse{hashedTag: 634a903bb526c4b171a73b7066a8cdb878e30c4bf975b24791793dec35596509, responderPublicKey: 3c981a8928171a492c5d2f14c...	test	67caeab5cd1daf06ee4fae9485d77fbd	KWhC8q9dqQbSbmmPDZwRZw	
2016-02-02T12:11:23.551+00:00	appServer:a1	qredos	DefaultInvocationLogger	DEBUG		Vault.putItem: Success{result: true}	test	604ebc8fe645833dbfb3075648d5fd8b	VsUUASNXdybul6vNyTpT0Q	
2016-02-02T12:11:23.545+00:00	appServer:a1	qredos	DefaultInvocationLogger	DEBUG		Vault.putItem{Item: EncryptedVaultItem{header: EncryptedVaultItemHeader{ref: VaultItemRef{vaultId: c111fa48d26a4338c0d19f...	test	604ebc8fe645833dbfb3075648d5fd8b	VsUUASNXdybul6vNyTpT0Q	
2016-02-02T12:11:23.544+00:00	appServer:a1	qredos	SubscriberActor	DEBUG		Unsubscribing from topic conversations-f71bf5c6897e7cd823606c67a28b2832a856204ba6f4ececb27e279d0bc8f8fc				
2016-02-02T12:11:23.544+00:00	appServer:a1	qredos	SubscriberActor	DEBUG		Subscriber Actor[akka://qredo/user/subscriber-WS-56c5140128577726ee23abcdc93a53d1-conversations-f71bf5c6897e7cd823606c67a28b2832a856204ba6f4ececb27e279d0bc8f8fc#1236318357...				
2016-02-02T12:11:23.508+00:00	appServer:a1	qredos	DefaultInvocationLogger	DEBUG		Rendezvous.create: Success{result: RendezvousCreated{expiresAt: [2016-02-02T13:11:23.492Z]}}	test	98cfff71ef19976c9683273ba5017d02	VsUUASNXdybul6vNyTpT0Q	
2016-02-02T12:11:23.492+00:00	appServer:a1	qredos	DefaultInvocationLogger	DEBUG	1	Rendezvous.create{creationInfo: RendezvousCreationInfo{hashedTag: 634a903bb526c4b171a73b7066a8cdb878e30c4bf975b24791793dec35596509, durationSeconds: [3600], responseCountL...	test	98cfff71ef19976c9683273ba5017d02	VsUUASNXdybul6vNyTpT0Q	
2016-02-02T12:11:23.264+00:00	appServer:a1	qredos	SubscriberActor	DEBUG		Unsubscribing from topic rendezvous-5fba93e09e01318813cd3a80f211937ef250f3157e4eb9916666dcd35d5f66ac				

Fig 3 - Failure

In the following case the operation fails.

In this case the respond #2 comes before the subscribe as in Fig2, but the gap between #2 and #3 is 0.13 seconds, so the subscriber is not notified.



2016-02-02T12:11:25.031+00:00	appServer.a1	qredos	DefaultInvocationLogger	DEBUG	Vault.putItem(item: EncryptedVaultItem(header: EncryptedVaultItemHeader(ref: VaultItemRef(vaultId: 24d2f1823a6e55d187947...	test	f3845d9d775c5f261419dbe133a8cb6f	kWhCBq9dqQbSbmmPDZwRZw
2016-02-02T12:11:25.007+00:00	appServer.a1	qredos	SubscriberActor	DEBUG	5 Subscribed to topic rendezvous-8d9d6937100bd79511912dd3fa562ee61a74ec52553b2a3889ec836415059c7			
2016-02-02T12:11:25.007+00:00	appServer.a1	qredos	RendezvousService	DEBUG	4 Adding subscription to hashed tag 8d9d6937100bd79511912dd3fa562ee61a74ec52553b2a3889ec836415059c7 on return channel 56c...	test	cb442b8169421fc090d1e9b57eda2221	VsUUAShXdybui6vNyTpT0Q
2016-02-02T12:11:24.998+00:00	appServer.a1	qredos	DefaultInvocationLogger	DEBUG	Rendezvous.respond: Success(result: RendezvousResponseRegistered(info: EncryptedResponderInfo(value: 28373a62000000003000...	test	9903bf23ff9cabcb1f4d4eb01ff60508	kWhCBq9dqQbSbmmPDZwRZw
2016-02-02T12:11:24.998+00:00	appServer.a1	qredos	RendezvousService	DEBUG	Pushing rendezvous response for hashed tag 8d9d6937100bd79511912dd3fa562ee61a74ec52553b2a3889ec836415059c7	test	9903bf23ff9cabcb1f4d4eb01ff60508	kWhCBq9dqQbSbmmPDZwRZw
2016-02-02T12:11:24.972+00:00	appServer.a1	qredos	DefaultInvocationLogger	DEBUG	3 Rendezvous.subscribeToResponses(hashedTag: 8d9d6937100bd79511912dd3fa562ee61a74ec52553b2a3889ec836415059c7, signature: ...	test	cb442b8169421fc090d1e9b57eda2221	VsUUAShXdybui6vNyTpT0Q
2016-02-02T12:11:24.959+00:00	appServer.a1	qredos	DefaultInvocationLogger	DEBUG	2 Rendezvous.respond(response: RendezvousResponse(hashedTag: 8d9d6937100bd79511912dd3fa562ee61a74ec52553b2a3889ec836415005...	test	9903bf23ff9cabcb1f4d4eb01ff60508	kWhCBq9dqQbSbmmPDZwRZw
2016-02-02T12:11:24.860+00:00	appServer.a1	qredos	DefaultInvocationLogger	DEBUG	Vault.putItem: Success(result: true)	test	f01e7ea7fb1d7ca1a0bc9f0679735b4b	VsUUAShXdybui6vNyTpT0Q
2016-02-02T12:11:24.853+00:00	appServer.a1	qredos	DefaultInvocationLogger	DEBUG	Vault.putItem(item: EncryptedVaultItem(header: EncryptedVaultItemHeader(ref: VaultItemRef(vaultId: c111fa448d26a4338c0d1...	test	f01e7ea7fb1d7ca1a0bc9f0679735b4b	VsUUAShXdybui6vNyTpT0Q
2016-02-02T12:11:24.822+00:00	appServer.a1	qredos	DefaultInvocationLogger	DEBUG	Rendezvous.create: Success(result: RendezvousCreated(expiresAt: {2016-02-02T13:11:24.800Z}))	test	bc0828a179b2e23bd931ad4f1038c43f	VsUUAShXdybui6vNyTpT0Q
2016-02-02T12:11:24.800+00:00	appServer.a1	qredos	DefaultInvocationLogger	DEBUG	1 Rendezvous.create(creationInfo: RendezvousCreationInfo(hashedTag: 8d9d6937100bd79511912dd3fa562ee61a74ec52553b2a3889ec83...	test	bc0828a179b2e23bd931ad4f1038c43f	VsUUAShXdybui6vNyTpT0Q
2016-02-02T12:11:24.764+00:00	appServer.a1	qredos	SubscriberActor	DEBUG	Unsubscribing from topic conversations-d81dcb7fcad7e1bc489f80233471c9f164362bcb2ca0cfeb74491a0736f2371			

The fix:

Even though the Process clearly registers the subscriber before the rendevous is responded to, because of the multi server arrangement and the time taken for inter server communication, it takes time to process this request and needs to be delayed before it is permitted to respond.

The simple fix in the test case (`ConversationWebSocketTests/testConversationMultiple`) is to insert a delay (0.2 seconds should be sufficient) between the creation of the Rendezvous, and the automatic subscription on Client 1 and any Response from Client 2

I can only think this error will manifest in a real world situation where a process automatically responds to a rendezvous, in this case a delay of 0.2 seconds will ensure any subscribers have correctly registered.