Subject: IDL on the Net (ION) Posted by Randy Shaughnessy on Thu, 09 Dec 2004 17:22:27 GMT View Forum Message <> Reply to Message

Hi Folks,

Not sure if this directly applies to this group?

Has anyone had firewall problems reported from external users, when using ION Java on their public web site?

Thanks. Randy Shaughnessy

Subject: Re: IDL on the Net (ION) Posted by p.sommer on Mon, 13 Dec 2004 03:35:38 GMT View Forum Message <> Reply to Message

Randy Shaughnessy wrote:

> Hi Folks,

>

> Not sure if this directly applies to this group?

- > Has anyone had firewall problems reported from external users, when using
- ION Java on their public web site?

- > Thanks.
- > Randy Shaughnessy

Hi Randy,

Is this a new problem, or have you just noticed the behavior? Is your ION Java Server behind, or outside a firewall? In short, ION Java communicates on a port that by default, is not typically open to internet clients sitting behind a firewall. However, if you start the ION Java Tunnel Broker server-side (assuming ION Server is outside firewall), ION Java should be able to tunnel through the client's firewall on port 80 -- typical web services port. The most efficient protocal is to open a port in the firewall that ION Java can use directly and avoid the Tunnel Broker. This is often doen on intranets where the network admin folks can exercise a greater level of control over both server and client.

If I missed the mark, let me know.

Subject: Re: IDL on the Net (ION)

```
Posted by Randy Shaughnessy on Tue, 14 Dec 2004 21:37:00 GMT
View Forum Message <> Reply to Message
<p.sommer@comcast.net> wrote in message
news:1102908938.797563.229670@c13q2000cwb.googlegroups.com...
> Randy Shaughnessy wrote:
>> Hi Folks,
>>
>> Not sure if this directly applies to this group?
>> Has anyone had firewall problems reported from external users, when
> using
>> ION Java on their public web site?
>>
>>
>> Thanks.
>> Randy Shaughnessy
>
>
> Hi Randy,
>
> Is this a new problem, or have you just noticed the behavior? Is your
> ION Java Server behind, or outside a firewall? In short, ION Java
> communicates on a port that by default, is not typically open to
> internet clients sitting behind a firewall. However, if you start the
> ION Java Tunnel Broker server-side (assuming ION Server is outside
> firewall), ION Java should be able to tunnel through the client's
> firewall on port 80 -- typical web services port. The most efficient
> protocal is to open a port in the firewall that ION Java can use
> directly and avoid the Tunnel Broker. This is often doen on intranets
> where the network admin folks can exercise a greater level of control
> over both server and client.
 If I missed the mark, let me know.
>
> Thanks,
> -Paul
Hi Paul,
```

Thanks for responding.

I believed as you, that Tunnel Broker would work through port 80. In fact, it just uses a different port (9085) and http code through that port. I set up a test computer to simulate the problem seen by others. I blocked out bound connections to port 7085 and 9085 on the server running ION and Tunnel Broker. I also logged what was occurring and found that the client still tries to reach port 7085 and/or 9085. One of the people having trouble with the site was also able to open up port 7085 on their firewall and everything worked.

There seems to be a lot of confusion at RSI with this. They do not even have the means to simulate the problem. I find it hard to believe that this problem has not been reported before. The reason we never saw it before is that our firewall doesn't block this port, so all the tests we ran were fine. Ours does not seem to be the standard. Most corporate firewalls block non-standard ports including both 9085 and 7085. It is not very practical or security conscious to expect these locations to open up these ports.

A simple test to tell whether or not your site is blocking these ports is to go to the RSI site and test the examples pages. Of course, they do not have Tunnel Broker running on their site, but either way it won't work if you have, what I would consider, a reasonable firewall security set up.

I am working with a techie, but they do not seem to know their own product very well at all. One e-mail said they will pass it on to the developers as a feature request. I responded that this is a necessity and they are not dealing with the real world if they think everyone should have those ports open by default. I am still waiting.

Here is the link to the examples. I would be curious to know if others are getting the "Unable to establish connection with ION Java server" message.

http://	/ion.research	systems.d	com/IONJ	lava/exam	oles/	basic.	htm
---------	---------------	-----------	----------	-----------	-------	--------	-----

Thanks,

Randy

Subject: Re: IDL on the Net (ION)

Posted by p.sommer on Wed, 15 Dec 2004 06:04:36 GMT

View Forum Message <> Reply to Message

Randy Shaughnessy wrote:

- > <p.sommer@comcast.net> wrote in message
- > news:1102908938.797563.229670@c13g2000cwb.googlegroups.com...

>>

>> Randy Shaughnessy wrote:

```
>>> Hi Folks,
>>>
>>> Not sure if this directly applies to this group?
>>> Has anyone had firewall problems reported from external users.
when
>> using
>>> ION Java on their public web site?
>>>
>>> Thanks,
>>> Randy Shaughnessy
>>
>>
>> Hi Randy,
>>
>> Is this a new problem, or have you just noticed the behavior? Is
your
>> ION Java Server behind, or outside a firewall? In short, ION Java
>> communicates on a port that by default, is not typically open to
>> internet clients sitting behind a firewall. However, if you start
the
>> ION Java Tunnel Broker server-side (assuming ION Server is outside
>> firewall), ION Java should be able to tunnel through the client's
>> firewall on port 80 -- typical web services port. The most
efficient
>> protocal is to open a port in the firewall that ION Java can use
>> directly and avoid the Tunnel Broker. This is often doen on
intranets
>> where the network admin folks can exercise a greater level of
control
>> over both server and client.
>> If I missed the mark, let me know.
>> Thanks.
>> -Paul
>>
> Hi Paul,
Thanks for responding.
> I believed as you, that Tunnel Broker would work through port 80. In
fact,
> it just uses a different port (9085) and http code through that port.
> up a test computer to simulate the problem seen by others. I blocked
out
```

> bound connections to port 7085 and 9085 on the server running ION and

## Tunnel

- > Broker. I also logged what was occurring and found that the client still
- > tries to reach port 7085 and/or 9085. One of the people having trouble with
- > the site was also able to open up port 7085 on their firewall and everything
- > worked.

I have to confess, I'm a bit embarrassed. I should have known that routing to port 80 would ultimately cause a collision with whatever web server happened to be listening there. I have worked with ION quite a bit over the years and in all honesty, never needed the Tunnel Broker, so I just plain misspoke. My apologies for not fully understanding the technology either!

Most of the serious ION Java projects I have worked on have been fairly large, but built for deployment over LANs (intranets). For example, the state of Alaska's Department of Natural Resources and several National Labs. Historically, there hasn't been a problem for general internet use either, but as organizations become more secure about routing traffic, I guess I'm not surprised this detail is now beginning to become an issue.

>

- > There seems to be a lot of confusion at RSI with this. They do not even have
- > the means to simulate the problem. I find it hard to believe that this
- > problem has not been reported before. The reason we never saw it before is
- > that our firewall doesn't block this port, so all the tests we ran were
- > fine. Ours does not seem to be the standard. Most corporate firewalls block
- > non-standard ports including both 9085 and 7085. It is not very practical or
- > security conscious to expect these locations to open up these ports.

Sorry you have gotten the run around. I hope you can understand that for someone in Tech Support to simulate, they would have had to spend possibly days securing appropriate hardware, setting up web services, RSI software, a firewall, etc, etc. It just goes beyond what they are typically equipped to manage, especially given the volume of calls they are expected to manage. I suspect they deferred to the developer since he has the entire infrastructure in place to test. Regardless, my suggestion would be to speak with your sales rep who can make sure you get the kind of support you need. This is especially true if you feel

your blood pressure rising, or if it's a time critical issue.

- > A simple test to tell whether or not your site is blocking these ports is to
- > go to the RSI site and test the examples pages. Of course, they do not have
- > Tunnel Broker running on their site, but either way it won't work if you
- > have, what I would consider, a reasonable firewall security set up.

I'm actually wondering just how common this problem is with other vendors as well. I mean, I'm fairly sure other 'common' services run on ports up in the 7000 range like ION Java. For example, doesn't QuickTime Streaming Server run up in the 7000s? Sounds to me like we need to talk to a network administrator who is accustomed to managing corporate network infrastructures. It just seems a bit overly paranoid to close all ports above a certain number. I'm actually very curious myself, so I'll check with our network gurus to get their take on it.

- > I am working with a techie, but they do not seem to know their own product
- > very well at all. One e-mail said they will pass it on to the developers as
- > a feature request. I responded that this is a necessity and they are not
- > dealing with the real world if they think everyone should have those ports
- > open by default. I am still waiting.

>

I don't know how many opportunities they have had to get down to this level in the product. Again, I suspect it was passed to the developer since he's got all the pieces of the puzzle at his disposal to use for testing. I am confident they will ultimately provide you with a thoughtful response...it just might take some time.

- > Here is the link to the examples. I would be curious to know if others are
- > getting the "Unable to establish connection with ION Java server" message.
- > http://ion.researchsystems.com/IONJava/examples/basic.html

The console message you mention above is obviously bad news. I'm left thinking about other options we might be able to come up with if your clients are locked down tightly for good. Before I mention any options, can you tell me a little bit about what you need in general terms as it relates to both IDL processing and client-side

interactivity? Also, are you running Apache, or? Lastly, are there other web services (enterprise software) worked into your architecture?

> Thanks,

>

> Randy

Sure. Hang in there and thanks in advance for the additional information. We'll figure something out...

Best regards,

-Paul

Subject: Re: IDL on the Net (ION)
Posted by p.sommer on Wed, 15 Dec 2004 06:11:06 GMT
View Forum Message <> Reply to Message

## Randy Shaughnessy wrote:

- > <p.sommer@comcast.net> wrote in message
- > news:1102908938.797563.229670@c13g2000cwb.googlegroups.com...

>>

- >> Randy Shaughnessy wrote:
- >>> Hi Folks.

>>>

>>> Not sure if this directly applies to this group?

>>>

>>> Has anyone had firewall problems reported from external users,

when

- >> using
- >>> ION Java on their public web site?

>>>

>>>

- >>> Thanks,
- >>> Randy Shaughnessy

>>

>>

>> Hi Randy,

>>

- >> Is this a new problem, or have you just noticed the behavior? Is your
- >> ION Java Server behind, or outside a firewall? In short, ION Java
- >> communicates on a port that by default, is not typically open to
- >> internet clients sitting behind a firewall. However, if you start the
- >> ION Java Tunnel Broker server-side (assuming ION Server is outside
- >> firewall), ION Java should be able to tunnel through the client's

- >> firewall on port 80 -- typical web services port. The most efficient
- >> protocal is to open a port in the firewall that ION Java can use
- >> directly and avoid the Tunnel Broker. This is often doen on intranets
- >> where the network admin folks can exercise a greater level of control
- >> over both server and client.
- >> If I missed the mark, let me know.

>>

- >> Thanks.
- >> -Paul

>>

> Hi Paul,

>

> Thanks for responding.

>

- > I believed as you, that Tunnel Broker would work through port 80. In fact.
- > it just uses a different port (9085) and http code through that port. I set
- > up a test computer to simulate the problem seen by others. I blocked out
- > bound connections to port 7085 and 9085 on the server running ION and Tunnel
- > Broker. I also logged what was occurring and found that the client still
- > tries to reach port 7085 and/or 9085. One of the people having trouble with
- > the site was also able to open up port 7085 on their firewall and everything
- > worked.

I have to confess, I'm a bit embarrassed. I should have known that routing to port 80 would ultimately cause a collision with whatever web service happened to be listening there. I have worked with ION quite a bit over the years and in all honesty, never needed the Tunnel Broker, so I just plain misspoke. My apologies for not fully understanding the technology either!

Most of the serious ION Java projects I have worked on have been fairly large, but built for deployment over LANs (intranets). For example, the state of Alaska's Department of Natural Resources and a number of National Labs. Historically, there hasn't been a problem for general internet use either, but as organizations become more secure about routing traffic, I guess I'm not surprised this detail is now beginning to become an issue.

- > There seems to be a lot of confusion at RSI with this. They do not even have
- > the means to simulate the problem. I find it hard to believe that this
- > problem has not been reported before. The reason we never saw it before is
- > that our firewall doesn't block this port, so all the tests we ran were
- > fine. Ours does not seem to be the standard. Most corporate firewalls block
- > non-standard ports including both 9085 and 7085. It is not very practical or
- > security conscious to expect these locations to open up these ports.

Sorry you got the run around. I hope you can understand that for someone in Tech Support to simulate, they would have had to spend possibly days securing appropriate hardware, setting up web services, RSI software, a firewall, etc, etc. It just goes beyond what they are typically equipped to manage, especially given the volume of calls they are expected to manage. I suspect they deferred to the developer since he has the entire infrastructure in place to test. Regardless, my suggestion would be to speak with your sales rep who can make sure you get the kind of support you need whenever you feel your blood pressure rising, or if it's a time critical issue.

- > A simple test to tell whether or not your site is blocking these ports is to
- > go to the RSI site and test the examples pages. Of course, they do not have
- > Tunnel Broker running on their site, but either way it won't work if you
- > have, what I would consider, a reasonable firewall security set up.

I'm actually wondering just how common this problem is with other vendors. I mean, I'm fairly sure other 'common' services run on ports up in the 7000 range like ION Java. For example, doesn't QuickTime Streaming Server run up in the 7000s? Sounds to me like we need to talk to a network administrator who is accustomed to managing corporate network infrastructures. It just seems a bit overly paranoid to close all ports above a certain number. I'm actually very curious myself, so I'll check with our network gurus to get their take on it.

- > I am working with a techie, but they do not seem to know their own product
- > very well at all. One e-mail said they will pass it on to the developers as
- > a feature request. I responded that this is a necessity and they are

not

- > dealing with the real world if they think everyone should have those ports
- > open by default. I am still waiting.

I don't know how many opportunities they have had to get down to this level in the product. Again, I suspect it was passed to the developer since he's got all the pieces of the puzzle at his disposal to use for testing. I am confident they will ultimately provide you with a thoughtful response...it just might take some time.

- > Here is the link to the examples. I would be curious to know if others are
- > getting the "Unable to establish connection with ION Java server" message.
- > http://ion.researchsystems.com/IONJava/examples/basic.html

That console message you mention above is obviously bad news. I'm left thinking about other options we might be able to come up with if your clients are locked down tightly for good. Before I mention any options, can you tell me a little bit about what you need in general terms as it relates to both IDL processing and client-side interactivity? Also, are you running Apache, or? Lastly, are there other web services (enterprise software) worked into your architecture?

> Thanks,

>

> Randy

Sure. Hang in there and thanks in advance for the additional information. We'll figure something out...

Best regards,

-Paul

Subject: Re: IDL on the Net (ION)
Posted by Michael Wallace on We

Posted by Michael Wallace on Wed, 15 Dec 2004 07:27:21 GMT

View Forum Message <> Reply to Message

- > Sure. Hang in there and thanks in advance for the additional
- > information. We'll figure something out...

This won't help your current situation, but just thought I'd offer up a couple of spare cents and some lessons learned when we tried to work

with ION-Java. At one time we were planning on using ION-Java because at the time we knew of no other way to get dynamic IDL online. The first drawback, before trying to work things through the tunnel broker, is that we are a strictly JSP/Serlvet shop. Applets should be avoided like the plague! ;-) Needless to say, ION-Java has this fascination about being applet only, so it was hard to try to fit pieces into our servlet paradigm.

We did try to force ION-Java into our holes and we eventually got some things working, but it was always a hassle. We gave up on ION-Java and instead have the web server spawn off IDL processes to execute the little IDL tasks (typically making plots) we need. I wrote up some Java classes to handle transmitting data to IDL via shared memory and creation of the IDL process. Once the IDL process completes, we just serve the file(s) IDL created back up to the user on the web site.

The nice things about this approach:

- 1.) No extra servers/ports to worry about/configure
- 2.) No extra ION-Java licenses
- 2a.) You only need a single IDL license on the web server
- 3.) Pretty fast\* (at least faster than our experiences using ION-Java)
- \* In doing some small tests (~50,000 X/Y pairs plotted), I could send numbers from Java to IDL via shared memory and have a basic plot done in just a couple seconds. An equivalent plot through ION-Java seemed to take many long seconds.

The only drawback I know of is if you really need to have Java applets, there's really not much choice in the matter. There's probably a way to work directly with IDL from an applet, but I'd guess that it'd be a lot more pain than it's worth to get past all of the security restrictions and such. If you're not required to have applets, you'll save yourself a lot of pain just by communicating with IDL directly. At least that was our experience.

-Mike

Subject: Re: IDL on the Net (ION)
Posted by p.sommer on Wed, 15 Dec 2004 14:47:49 GMT
View Forum Message <> Reply to Message

## Randy Shaughnessy wrote:

- > <p.sommer@comcast.net> wrote in message
- > news:1102908938.797563.229670@c13g2000cwb.googlegroups.com...

>>

- >> Randy Shaughnessy wrote:
- >>> Hi Folks.

```
>>>
>>> Not sure if this directly applies to this group?
>>>
>>> Has anyone had firewall problems reported from external users,
when
>> using
>>> ION Java on their public web site?
>>>
>>>
>>> Thanks.
>>> Randy Shaughnessy
>>
>> Hi Randy,
>>
>> Is this a new problem, or have you just noticed the behavior? Is
vour
>> ION Java Server behind, or outside a firewall? In short, ION Java
>> communicates on a port that by default, is not typically open to
>> internet clients sitting behind a firewall. However, if you start
the
>> ION Java Tunnel Broker server-side (assuming ION Server is outside
>> firewall), ION Java should be able to tunnel through the client's
>> firewall on port 80 -- typical web services port. The most
efficient
>> protocal is to open a port in the firewall that ION Java can use
>> directly and avoid the Tunnel Broker. This is often doen on
intranets
>> where the network admin folks can exercise a greater level of
control
>> over both server and client.
>> If I missed the mark, let me know.
>>
>> Thanks,
>> -Paul
>>
> Hi Paul,
>
> Thanks for responding.
> I believed as you, that Tunnel Broker would work through port 80. In
> it just uses a different port (9085) and http code through that port.
I set
> up a test computer to simulate the problem seen by others. I blocked
> bound connections to port 7085 and 9085 on the server running ION and
```

Tunnel

- > Broker. I also logged what was occurring and found that the client still
- > tries to reach port 7085 and/or 9085. One of the people having trouble with
- > the site was also able to open up port 7085 on their firewall and everything
- > worked.

I have to confess, I'm a bit embarrassed. I should have known that routing to port 80 would ultimately cause a collision with whatever web service happened to be listening there. I have worked with ION quite a bit over the years and in all honesty, never needed the Tunnel Broker, so I just plain misspoke. My apologies for not fully understanding the technology either!

Most of the serious ION Java projects I have worked on have been fairly large, but built for deployment over LANs (intranets). For example, the state of Alaska's Department of Natural Resources and several National Labs. Historically, there hasn't been a problem for general internet use either, but as organizations become more secure about routing traffic, I guess I'm not surprised this detail is now beginning to become an issue.

>

- > There seems to be a lot of confusion at RSI with this. They do not even have
- > the means to simulate the problem. I find it hard to believe that this
- > problem has not been reported before. The reason we never saw it before is
- > that our firewall doesn't block this port, so all the tests we ran were
- > fine. Ours does not seem to be the standard. Most corporate firewalls block
- > non-standard ports including both 9085 and 7085. It is not very practical or
- > security conscious to expect these locations to open up these ports.

Sorry you got the run around. I hope you can understand that for someone in Tech Support to simulate, they would have had to spend possibly days securing appropriate hardware, setting up web services, RSI software, a firewall, etc, etc. It just goes beyond what they are typically equipped to manage, especially given the volume of calls they are responsible for. I suspect they deferred to the developer since he has the entire infrastructure in place to test. Regardless, my suggestion would be to speak with your sales rep who can make sure you get the kind of support you need when you feel your blood pressure rising, or if it's a time critical issue.

- > A simple test to tell whether or not your site is blocking these ports is to
- > go to the RSI site and test the examples pages. Of course, they do not have
- > Tunnel Broker running on their site, but either way it won't work if vou
- > have, what I would consider, a reasonable firewall security set up.

I'm actually wondering just how common this problem is with other vendors. I mean, I'm fairly sure other 'common' services run on ports up in the 7000 range like ION Java. For example, doesn't QuickTime Streaming Server run up in the 7000s?

- > I am working with a techie, but they do not seem to know their own product
- > very well at all. One e-mail said they will pass it on to the developers as
- > a feature request. I responded that this is a necessity and they are not
- > dealing with the real world if they think everyone should have those ports
- > open by default. I am still waiting.

I don't know how many opportunities they have had to get down to this level in the product. Again, I suspect it was passed to the developer since he's got all the pieces of the puzzle at his disposal to use for testing. I am confident they will ultimately provide you with a thoughtful response...it just might take a little time.

- > Here is the link to the examples. I would be curious to know if others are
- > getting the "Unable to establish connection with ION Java server" message.
- > http://ion.researchsystems.com/IONJava/examples/basic.html

That console message you mention above is obviously bad news. I'm left thinking about other options we might be able to come up with if your clients are locked down tightly for good. Before I mention any options, can you tell me a little bit about what you need in general terms as it relates to both IDL processing and client-side interactivity? Also, are you running Apache, or? Lastly, are there other web services (enterprise software) worked into your architecture?

> Thanks,

>

>

> Randy

Sure. Hang in there and thanks in advance for the additional information. We'll figure something out...

Best regards,

-Paul

Subject: Re: IDL on the Net (ION)
Posted by p.sommer on Wed, 15 Dec 2004 16:53:50 GMT
View Forum Message <> Reply to Message

> Thanks for responding.

>

- > I believed as you, that Tunnel Broker would work through port 80. In fact.
- > it just uses a different port (9085) and http code through that port. I set
- > up a test computer to simulate the problem seen by others. I blocked out
- > bound connections to port 7085 and 9085 on the server running ION and Tunnel
- > Broker. I also logged what was occurring and found that the client still
- > tries to reach port 7085 and/or 9085. One of the people having trouble with
- > the site was also able to open up port 7085 on their firewall and everything
- > worked.

I have to confess, I'm a bit embarrassed. I should have known that routing to port 80 would ultimately cause a collision with whatever web service happened to be listening there. I have worked with ION quite a bit over the years and in all honesty, never needed the Tunnel Broker, so I just plain misspoke. My apologies for not fully understanding the technology either!

Most of the serious ION Java projects I have worked on have been fairly large, but built for deployment over LANs (intranets). For example, the state of Alaska's Department of Natural Resources and several National Labs. Historically, there hasn't been a problem for general internet use either, but as organizations become more secure about routing traffic, I guess I'm not surprised this detail is now beginning to become an issue.

>

- > There seems to be a lot of confusion at RSI with this. They do not even have
- > the means to simulate the problem. I find it hard to believe that this
- > problem has not been reported before. The reason we never saw it before is
- > that our firewall doesn't block this port, so all the tests we ran were
- > fine. Ours does not seem to be the standard. Most corporate firewalls block
- > non-standard ports including both 9085 and 7085. It is not very practical or
- > security conscious to expect these locations to open up these ports.

Sorry you got the run around. I hope you can understand that for someone in Tech Support to simulate, they would have had to spend possibly days securing appropriate hardware, setting up web services, RSI software, a firewall, etc, etc. It just goes beyond what they are typically equipped to manage, especially given the volume of calls they are responsible for. I suspect they deferred to the developer since he has the entire infrastructure in place to test. Regardless, my suggestion would be to speak with your sales rep who can make sure you get the kind of support you need when you feel your blood pressure rising, or if it's a time critical issue.

- > A simple test to tell whether or not your site is blocking these ports is to
- > go to the RSI site and test the examples pages. Of course, they do not have
- > Tunnel Broker running on their site, but either way it won't work if you
- > have, what I would consider, a reasonable firewall security set up.

I'm actually wondering just how common this problem is with other vendors. I mean, I'm fairly sure other 'common' services run on ports up in the 7000 range like ION Java. For example, doesn't QuickTime Streaming Server run up in the 7000s?

- > I am working with a techie, but they do not seem to know their own product
- > very well at all. One e-mail said they will pass it on to the developers as
- > a feature request. I responded that this is a necessity and they are not
- > dealing with the real world if they think everyone should have those ports
- > open by default. I am still waiting.

I don't know how many opportunities they have had to get down to this level in the product. Again, I suspect it was passed to the developer since he's got all the pieces of the puzzle at his disposal to use for testing. I am confident they will ultimately provide you with a thoughtful response...it just might take a little time.

- > Here is the link to the examples. I would be curious to know if others are
- > getting the "Unable to establish connection with ION Java server" message.

> http://ion.researchsystems.com/IONJava/examples/basic.html

That console message you mention above is obviously bad news. I'm left thinking about other options we might be able to come up with if your clients are locked down tightly for good. Before I mention any options, can you tell me a little bit about what you need in general terms as it relates to both IDL processing and client-side interactivity? Also, are you running Apache, or? Lastly, are there other web services (enterprise software) worked into your architecture?

- > Thanks.
- > Randy

Sure. Hang in there and thanks in advance for the additional information. We'll figure something out...

Best regards,

-Paul