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[**Michael Vincent Waller**](https://disqus.com/by/michaelvincentwaller/) • [a month ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-3323306046)

Hi, This function was great for SQL 2012.... Is there a way to create the exact same resulting table @Hierarcyhy with Parent\_Id using SQL 2016 OPENJSON only? (So no loops or character index logic.) This function works great, but it fails with huge JSON strings in the hundreds of thousand of characters, and OPENJSON should perform using SQL engine more efficiently in 2016.

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[](https://disqus.com/by/disqus_XXipQHdJvG/)

[**Nancy Forbes**](https://disqus.com/by/disqus_XXipQHdJvG/) • [3 months ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-3221935628)

I got this added and it works fine if I manually run my stored procedure but if I try to run it in the Job Scheduler I'm seeing "invalid length parameter passed to the LEFT or SUBSTRING function". I added ParseJson function in this article to my database. (Does it need to be in master instead?) I tried the modifications noted by warrenblaisdell but it didn't make any difference. I've added my SQL Agent account to the database security - even making it a dbo in case there was some permission issue that was masking as the invalid length error. Ideas?

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[**jsegarra**](https://disqus.com/by/simpletalk-sso-417dc6775ddaf3b37014ddaafa33968b/) • [4 months ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-3188926591)

Another JSON producer and parser, in TSQL but pretty fast.

[https://www.codeproject.com...](https://disq.us/url?url=https%3A%2F%2Fwww.codeproject.com%2FArticles%2F1000953%2FJSON-for-SQL-Server-Part%3AiwVLYDgkayHF-Fdh5OGQWJGEaIc&cuid=4451726)   
[https://www.codeproject.com...](https://disq.us/url?url=https%3A%2F%2Fwww.codeproject.com%2FArticles%2F831487%2FNested-XML-from-SQL-to-JSON%3AwywfVlv-tckpSPAh9A08orpmq1U&cuid=4451726)

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[**Chuck**](https://disqus.com/by/simpletalk-sso-be464d03e6d9a7f87cf8ac19398a4a66/) • [10 months ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2857093847)

Hello, I am new to JSON parsing in SQL Server. I just need to parse a JSON object coming out of a C# MVC application using a stored procedure which will be looking for data to return to the application. The database is in SQL Server 2014 and we are not creating tables from the JSON object we are just trying to return the data from the SQL database like a search function. Can someone help me out? Thanks, Chuck

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**young.programmer** • [2 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856303)

Parser Fails  
When I try to parse a JSON like '{"FirstName":"John\","LastName":"Doe"}', I am getting error

Msg 245, Level 16, State 1, Line 1  
Conversion failed when converting the nvarchar value '2Last' to data type int.

Is there a workaround for this?

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**jsegarra** • [2 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856301)

Another JSON parser in TSQL  
Just to let you know that I've implemented another JSON parser in SQL.

This one is full TSQL, but using a procedural approach. Despite being less orthodox, it is much faster. I have also included a JSON2STRING function and two QUERYING (ala XPath) functions.

You can find it at: [http://www.codeproject.com/...](http://disq.us/url?url=http%3A%2F%2Fwww.codeproject.com%2FArticles%2F1000953%2FJSON-for-Sql-Server-Part%3AHD2jJh3WqopOFLIU5C4YjaiCmdU&cuid=4451726)

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**shashatriv** • [2 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856302)

Error occurs on providing incorrect json [I need to handle this in function]  
Following error occurs

Cannot insert the value NULL into column 'valuetype', table '@hierarchy'; column does not allow nulls. INSERT fails.

Please let me know how to handle this in function itself.

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**simontrain** • [2 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856299)

TEXTSIZE working with JSON  
Hi,

Great article. Just sharing a gotcha I found when working with JSON in T-SQL.

You may have to change the TEXTSIZE setting to support large JSON text strings in TEXT, NTEXT, VARCHAR(MAX) and NVARCHAR(MAX) variables or columns. I found this necessary when running a SQL Agent job where TEXTSIZE defaults to 1024. You can increase that using SET TEXTSIZE 2147483647 (2 GB).

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**Phil Factor** [simontrain](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856299) • [2 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856462)

Re: TEXTSIZE working with JSON  
This only happens in SSMS, of course, where there is a limit to the size of a string displayed in the results pane of the query window.

SSMS only displays a limited length of string of 8092 characters. If this is the case, you can, with SSMS, export the data to a flat file which will not be truncated. To do this:

Right-click the Database and then click Tasks -> Export Data Select your Data Source and choose "Flat File Destination" for the Destination type. Then, choose a file name for the output.  
On the menu item "Specify Table Copy or Query", choose "Write a query to specify the data to transfer". Then paste in the query.

The rest should be pretty obvious. This will output the file to text and you can open it in notepad or whatever text editor you choose.

You can use SQLCMD as well.

When I do this sort of work I use a stored procedure of my own to save JSON files to disk that I've already published on the site, called spSaveTextToFile. which you can get here [https://www.simple-talk.com...](https://disq.us/url?url=https%3A%2F%2Fwww.simple-talk.com%2Fsql%2Ft-sql-programming%2Fthe-tsql-of-text-files%2F%3AuLL9K80JqSzUgaAcHFIjoKOBvIM&cuid=4451726)

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**JSON4SQL** • [2 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856300)

JSON4SQL  
I have developed a JSON type for SQL Server available for purchase at [http://www.json4sql.com](http://disq.us/url?url=http%3A%2F%2Fwww.json4sql.com%3A21zWUCT_TMxZDqCU6jYF4SC-uvg&cuid=4451726). It is a port of the binary JSON type just released for PostgreSQL.

It also offers:  
•Table value functions for returning elements of JSON objects / columns as a result set  
•A fluent API for creating, modifying, and accessing object properties  
•JSONPath expressions to set, remove, and get data within JSON objects (similar to XPath expressions for XML)  
•Aggregations for converting result sets into objects or arrays  
•Binary storage for fast data access without reparsing

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**kdinuk** • [3 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856298)

load to table  
Hi, How do I load jason file to table?

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**warrenblaisdell** • [3 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856296)

Negative numbers  
I just ran across the same problem with negative numbers. Here's the fix:

this line:

@start=PATINDEX('%[^A-Za-z0-9@+.e][A-Za-z0-9@+.e]%', ' '+@contents collate SQL\_Latin1\_General\_CP850\_Bin)

Should be changed to this:

@start=PATINDEX('%[^A-Za-z0-9@+-.e][A-Za-z0-9@+-.e]%', ' '+@contents collate SQL\_Latin1\_General\_CP850\_Bin)

Then this line a little later that determines real vs. int:

IF PATINDEX('%[^0-9]%', @value collate SQL\_Latin1\_General\_CP850\_Bin)>0

changes to this:

IF PATINDEX('%[^0-9-]%', @value collate SQL\_Latin1\_General\_CP850\_Bin)>0

Now it seems to be working for me.

* + •
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**marinb** • [3 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856297)

Problem with arrays in JSON  
When all arrays in JSON inpu are with single values, parseJSON and then ToJSON returns JSON without keys.  
Example:   
'{"array1":["xxx"],"array2":["xxx"],"boolean":true}'   
returns: { ["xxx" ], ["xxx"],true}

But when one of arrays has two values output is correct:  
'{"array1":["xxx","yyy"],"array2":["xxx"],"boolean":true}'  
returns:'{"array1":["xxx","yyy"],"array2":["xxx"],"boolean":true}'

* + •
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**Phil Factor** • [3 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856294)

Re: problems  
Hmm. Thanks for these recent bug reports! I'll fix these as soon as I get a moment!

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**marinb** • [3 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856295)

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**wmvijay** • [3 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856292)

Problem with negative values in json  
This is great and I have used it extensively. Just realized though that negative values are parsed as positive. e.g.

SELECT \* FROM [dbo].[parseJSON]('{"json": [{"Qty":-100}]}') where [ValueType] not in ('object','array')

parses Qty as 100.

Is there any way to handle -ve values?

Thanks

* + •
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**jens.frandsen** • [3 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856293)

Fixing problem with quotes.  
First I'd like to say thank you, great job on this.

We found the following changes are needed to the JSONEscaped function

Replace:   
... FROM (SELECT  
'"' AS FromString, '"' AS ToString  
UNION ALL SELECT '', '\'...  
With:   
... FROM (SELECT  
'' AS FromString, '\' AS ToString  
UNION ALL SELECT '"', '"'...

This enables a value with a quote in it to be properly encoded.

Thanks!

* + •
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**mikko** • [3 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856290)

Be aware of space between name and colon  
I noticed that if you have kind of JSON where there's space between elements name and colon, the code wont work properly.  
Took me hours to figure out what's wrong in my code.

so JSON must be of form   
"name": "stringValue"  
not:  
"name" : "stringValue"

* + •
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**John Galt** • [4 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856291)

New release of J-SQL solution now available on GitHub  
I have finally found time to publish my latest release of J-SQL to [https://github.com/jgcoding...](https://disq.us/url?url=https%3A%2F%2Fgithub.com%2Fjgcoding%2FJ-SQL.git%3ASrfiCO3Yh2TN1rR7k2j4d0Dnmt4&cuid=4451726).

Although Phil's solution is technically brilliant it is implemented in T-SQL, which to me only adds to my amazement. But string manipulation and concatenation performs very poorly in T-SQL. It is very slow.

J-SQL's ToJsonTable is 40 times faster than a T-SQL solution.

Although I am aware of other solutions by those who have attempted to compile an existing JSON library into the CLR as an assembly I am unaware of any of these which will do so unless the permission level is set to "UNSAFE". This is not a solution at all as a result.

J-SQL may be compiled as a CLR assembly with SAFE permission setting.

Please note linefeeds, tabs, spaces, or other "invisible" special characters preceding a valid JSON delimiter must be removed. Those residing with a valid quoted string item value do not pose a problem. See the notes for details.

Enjoy

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**nmcdermaid** • [4 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856286)

I love a good iconoclastic romp  
really I do.

* + •
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**Mike Stankavich** • [4 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856287)

Thanks for sharing helpful function + bug report  
Thanks for sharing this solution. It helped me quickly complete a data migration for some SQL data with an embedded JSON column.

I did find one small bug though. The @token variable needs to be NVARCHAR(MAX), not NVARCHAR(200). That causes all strings longer than 200 characters to get truncated down to 200.

* + •
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**Etriaph** • [5 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856285)

JSON vs. XML  
I just wanted to comment on the quote at the top. Comparing JSON to XML is a little strange. XML describes data (the key here is describes) where JSON is a serialization format for objects. You can describe objects in XML but that's only a portion of its usage. That we use one of the two to transport data between systems tends to be the only great similarity aside from the capability of both to possess a hierarchy.

You could just as easily describe a `forums` and a `posts` tables as a comparable format to XML, but it's really not.

At any rate, interesting SQL functions; scary, but interesting. :D

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**John Galt** • [6 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856288)

new CLR Json Parser  
As indicated in my post of 5/28/2011 I have completed the first draft of a conversion of your T-SQL based solution of your jsonParse. I would like to share it with you given my CLR version is a .NET conversion of your original T-SQL solution. Presently it produces an exact copy of the results from your solution but it is over 20% faster on the low end. The performance improvement increases as the object size and complexity increases and the number of objects parsed increases.

Please let me know how I can get this solution to you.

Thank you again for your solution I hope you and yours will enjoy the improvements I have made.

* + •
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**John Galt** • [6 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856284)

This is brilliant.  
I designed a far less robust SQL JSON Serializer/de-serializer than this one 2 years ago using the CLR. This one is much more robust and likely reliable.

I do strongly encourage you to build a CLR-based version at your earliest opportunity. I think you will be very pleasantly surprised at the performance gains you will achieve. The gains may be so significant as to throw open the doors I have cracked when I have first endeavored storing "documents" in SQL Server.

As I find time I will work on a CLR version based upon the work you have done here unless and until you build one of the same quality of this T-SQL version.

It may be worth the effort to reverse engineer the DataContractJsonSerializer available in .NET. I don't believe it is compilable into SQL's CLR.

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**John Galt** • [6 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856282)

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**Phil Factor** [John Galt](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856282) • [6 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856461)

Re: This is brilliant.  
Yes, I'd be really interested to see the CLR version and try it out.

If you email the editor<at>simple<hyphen>talk<dot>com, he'll pass it on to me.

Thanks for the kind words. If I were rolling up the sleeves and doing a CLR, I'd be inclined to 'go the whole hog' and do a CLR YAML parser. It will parse JSON as well, of course, but it would be great to be able to be able to process YAML documents and CLR is the only way to do it. There are several open-source versions that you could use. When you achieve it let the editor of Simple-Talk know!  
This algorithm in this JSON serialiser/Deserialiser article was imposed on me because of the limitations of TSQL, but it would be just as appropriate to any language and would be  as efficient for C# or VB. The particular interest for me is to be able to use it for converting JSON to XML and other formats, since it converts to a neutral table which can then generate a number of different serialisations.

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**ricva** • [6 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856280)

another Json split for tsql  
I also wrote a parser - fnSplitJson2, also all t-sql, and available for sql server 2005 and below or sql server 2008. Would have save you have the work :-)

[http://www.sqlservercentral...](http://disq.us/url?url=http%3A%2F%2Fwww.sqlservercentral.com%2Farticles%2FJSON%2F68128%2F%3AawLNzJeOkJln1QdUBXWgWiurx30&cuid=4451726)

Find it very useful because it will also tell me the length and other errors that may occur in the string.

* + •
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**Phil Factor** [ricva](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856280) • [6 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856463)

Re: another Json split for tsql  
Ric's JSON splitter is on our sister publication SQL Server Central. It is well worth a look. I hadn't realised it was there.  I guess a lot of TSQL programmers have been working on this particular problem.

* + - •
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**Robert Towne** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856279)

Nice job  
Thanks, I thought about attempting something like this because my shop is anti-CLR for the most part (at least for unsafe assemblies).

To do this with a CLR function (someone please correct me if I am wrong) you need to add several unsafe assemblies to your production environment. For example, if I wanted to use [http://json.codeplex.com/](http://disq.us/url?url=http%3A%2F%2Fjson.codeplex.com%2F%3ATxA21QoyYWcJ17FyfruqcFsXlAc&cuid=4451726), you would need to add 3 unsafe assemblies to get this to work. Maybe not a problem for some shops, but understandably a problem for others.

Anyway, great post and good discussions.

* + •
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**Phil Factor** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856283)

Oops  
Just fixed a bug that I noticed in the XML Outputter, and added the source to it the speechbubble at the top of the article.

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**Phil Factor** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856276)

Re: JSON Shred in CLR  
Sure. As I say in the article, CLR is the best choice for this sort of thing, if you have a choice. I don't know which is the best version of a CLR for shredding JSON so it would be great if anyone else who has had a good experience with a JSON CLR to leave a comment. I'd suspect that the best idea would be to have one that ships with the SQL Server product, particularly now that Microsoft supports OData. [http://www.odata.org/develo...](http://disq.us/url?url=http%3A%2F%2Fwww.odata.org%2Fdevelopers%2Fprotocols%2Fjson-format%3AiVSfIs4TvngpMXJVw605Bi9Refo&cuid=4451726)

I certainly wouldn't want to shred Facebook info in TSQL! I wrote this code for a particular purpose that used reasonably short documents.

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**Anonymous** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856277)

json shred in CLR  
Its much too slow and cpu heavy in T-SQL for json of any size.

I tried various methods before opting for using an open source .net json libray in a CLR proc.

Described here [http://www.sql-library.com/...](http://disq.us/url?url=http%3A%2F%2Fwww.sql-library.com%2F%3Fp%3D140%3A9rPhr3YpAW_KHEesO7peqBePVuo&cuid=4451726)

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**Anonymous** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856278)

CLR? Your DBA let's you use that scary thing?   
lol

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**Thought Police** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856268)

Disappointed  
"'Oh yes', will chime in the application thought police, 'this is far better done in the application or with a CLR.'"  
\*chime\*  
While this is a good trick, The only possible reason I can think of to use this monstrosity is a scenario that you point out, where there is no application infrastructure in place.  
Where an CLR application layer is available, you can do JSON serialization/deserialization in a few lines of code. Using a hundred lines of complex sql nested calls instead goes against all basic participles of creating maintainable systems.  
One whose rationale is that they "lack the necessary skills with procedural code" is the proverbial man whose only tool is a hammer.

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**Phil Factor** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856266)

Re: Recursive CTEs  
True but what about performance, compared with a procedural language? I use recursive CTEs, but I get better timings with an iterative solution in TSQL. Maybe I'm doing something wrong, so we might set this as a challenge in the Phil Factor Speed Phreak competition!

* + •
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**BuggyFunBunny** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856269)

You quote Crockford, good  
-- Using recursion in TSQL is like Sumo Wrestlers doing Ballet. It is possible but not pretty.

Well, no. That's what the CTE paradigm is for. Without CTE, then yes.

-- The so-called 'impedence-mismatch' between applications and databases is, I reckon, an illusion.

It is. While the term was first used by (IIRC) OO programmers who hated the RM, the instance data of an object (and any included objects) is purely relational.

-- The database developer already has the tools to do the work with XML, but why not the simpler, and more practical JSON?

Because the Suits that run companies producing Database Engines are just as ignorant as Suits everywhere else (I'm talking to you, Armonk). XML is the Emperor's New Clothes, and loverly they are, too. Remember, it was created by LAWYERS and propelled by OO coders. Not a data geek to be found.

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**Sunny** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856259)

.Net Assembly  
As realSantaClara said: amazing T-SQL code! But it seems to me that this is an example to leave T-SQL and implement such things in an .Net Assembly ;-)

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**Phil Factor** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856274)

Re: impedence-mismatch  
Er, Maybe. However, if we had sensible ways of processing JSON or YAML strings from applications that are built-in like XML, then a lot of problems would vanish. What I meant to say was that JSON is so easy to produce from an application, Particularly Javascript, and are relatively easy to process from a stored procedure, that if we shared this language, a lot of problems would go away. No, getting XML from Javascript objects isn't as neat or trivial. I'm happy to make JSON the language of an application-interface, both ways.

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**realSantaClara** • [7 years ago](https://www.simple-talk.com/sql/t-sql-programming/consuming-json-strings-in-sql-server/#comment-2807856273)

'impedence-mismatch'  
Phil ... you are amazing ... but doesn't this very article demonstrate the real existence of 'impedence-mismatch' ?