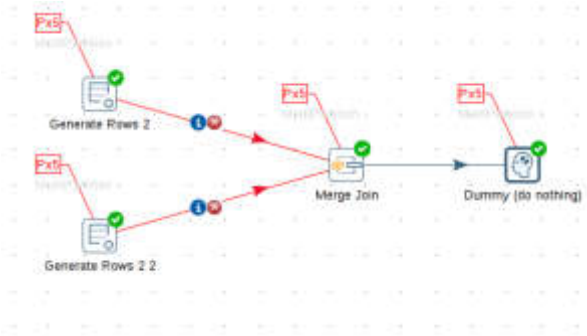
Scaling merge joins in Pentaho Data Integration

dankeeley.wordpress.com |

A while ago I was working on a project which used brutal amounts of partitioning within PDI so we could get a decent throughput on our jobs. The main reason for this was a constraint of using just a single box – Not a common architecture these days. Anyway we managed to get the throughput we needed (Getting on for 1M rows per second over the whole job) so that's fine.

We hit a minor issue though when it came to the merge join step. (A similar albeit different issue exists for stream lookup). Basically if you have a lovely partitioned stream coming in, and want to join with another already partitioned stream, PDI doesn't support this. In fact, it gives you a great big red hop just to make the point:



If you hover over the hop it tells you why you cannot do this.

That appears to mean you must de-partition (via a dummy step) single threaded merge join, then re-partition moving forward. Meh; That's just not nice.

There is however another way in some cases – this depends entirely on your data whether or not it will work. But for us it did – and for us it scaled wonderfully. The simple mapping.

This new(ish) mapping component has one important feature over the original mapping component (do we call it complex mapping?) – It can be partitioned. And the reason for that is because it can only have and must have 1 input and 1 output.

So our new transformation looks like this:

And the mapping itself looks like this:

Now; You must test this carefully because there's an awful lot more work in doing this – and I can imagine in some cases you'll actually get worse performance. But it's another handy tool to have in the belt! And YES; It does mean your input query for the right hand side of the join gets done as many partitions as you have – but that's a price you may have to pay. (And again, only works if one stream is an order of magnitude larger than the other.)

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