

# Technical Note

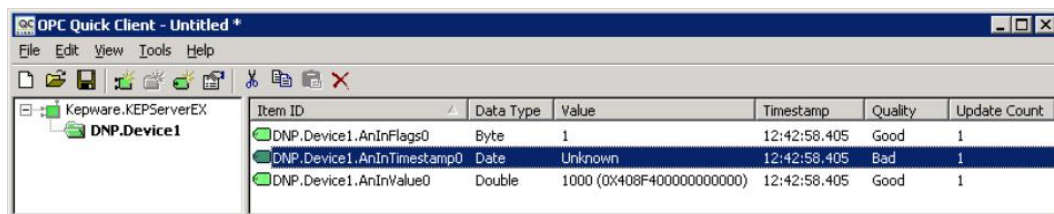
## DNP3 Timestamping Events

A DNP outstation can be configured to return the time-of-occurrence for events, which allows for the proper sequencing of events. Each event is timestamped by the outstation with the time-of-occurrence (when the event transpired). When the outstation returns the event, the DNP client uses the time-of-occurrence value for the OPC timestamp for all sub-types and for the .Timestamp tag value.

### 1. OPC DA and Time-of-Occurrence

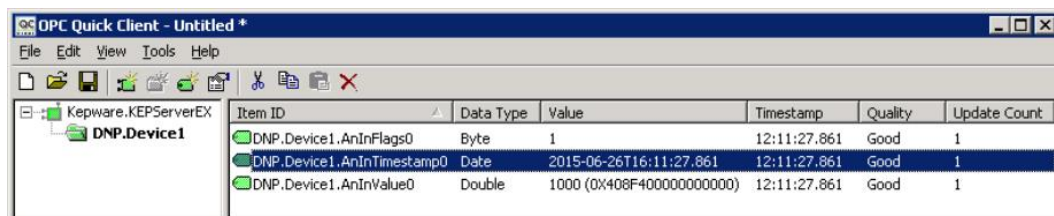
Each event updated to the client has the time-of-occurrence (from the outstation) represented as the OPC timestamp and as the value of the .Timestamp tag.

Until the first event with a time-of-occurrence is received from the outstation, the .Timestamp tag quality is “Bad” and the OPC timestamp for all sub-types is the OPC server timestamp.



| Item ID                    | Data Type | Value                     | Timestamp    | Quality | Update Count |
|----------------------------|-----------|---------------------------|--------------|---------|--------------|
| DNP.Device1.AnInFlags0     | Byte      | 1                         | 12:42:58.405 | Good    | 1            |
| DNP.Device1.AnInTimestamp0 | Date      | Unknown                   | 12:42:58.405 | Bad     | 1            |
| DNP.Device1.AnInValue0     | Double    | 1000 (0X408F400000000000) | 12:42:58.405 | Good    | 1            |

The date is included in the value for the .Timestamp tag for the time-of-occurrence. The OPC server adjusts the time-of-occurrence to the local time of the OPC server for the OPC timestamp. The value of the .Timestamp tag is the UTC time-of-occurrence.



| Item ID                    | Data Type | Value                     | Timestamp    | Quality | Update Count |
|----------------------------|-----------|---------------------------|--------------|---------|--------------|
| DNP.Device1.AnInFlags0     | Byte      | 1                         | 12:11:27.861 | Good    | 1            |
| DNP.Device1.AnInTimestamp0 | Date      | 2015-06-26T16:11:27.861   | 12:11:27.861 | Good    | 1            |
| DNP.Device1.AnInValue0     | Double    | 1000 (0X408F400000000000) | 12:11:27.861 | Good    | 1            |

## 2. OPC UA Time-of-Occurrence and Server Time

When using an OPC UA connection, the client can obtain the outstation time-of-occurrence as well as the server time

| Attribute               | Value                              |
|-------------------------|------------------------------------|
| [-] NodeId              | NodeId                             |
| NamespaceIndex          | 2                                  |
| IdentifierType          | String                             |
| Identifier              | DNP3 Ethernet.slave4.AnInValue0    |
| NodeClass               | Variable                           |
| BrowseName              | 2, "AnInValue0"                    |
| DisplayName             | "en", "AnInValue0"                 |
| Description             | "en", ""                           |
| WriteMask               | 0                                  |
| UserWriteMask           | 0                                  |
| [-] Value               |                                    |
| SourceTimestamp         | 6/30/2015 12:14:12.632 PM          |
| SourcePicoseconds       | 0                                  |
| ServerTimestamp         | 6/30/2015 12:19:55.470 PM          |
| ServerPicoseconds       | 0                                  |
| StatusCode              | Good (0x00000000)                  |
| Value                   | 999                                |
| [-] DataType            | Double                             |
| NamespaceIndex          | 0                                  |
| IdentifierType          | Numeric                            |
| Identifier              | 11                                 |
| ValueRank               | -1                                 |
| ArrayDimensions         | BadAttributeIdInvalid (0x80350000) |
| AccessLevel             | Readable                           |
| UserAccessLevel         | Readable                           |
| MinimumSamplingInterval | 10                                 |
| Historizing             | false                              |