CONNECT data services

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AF data that can be transferred

You can transfer the following AF element data into CONNECT data services:

- Dynamic AF attributes with PI point data references
- Static AF attributes (attributes with no data reference)

Supported dynamic AF attributes can reference a PI point via a Data Archive server name and tag name. This transferred data does not include any data retrieval qualifiers. The associated event data contains simple PI point attributes with the same historical and streaming transfer mechanism as explicit PI points.

The table below lists the AF objects that can be included in a PI to CONNECT data transfer and what those objects appear as in CONNECT data services.

AF Object	**CONNECT data services Object**
Elements	Assets
Dynamic AF attributes with PI point data references **Note:** Dynamic AF attributes are transferred only if they are on AF elements. They are not transferred if they are on AF element templates. **Note:** Only AF Attribute Templates with a basic type (Boolean, Byte, DateTime, Double, GUID, Int16, Int32, Int64, Single, or String) and Enumeration Set are supported and will be transferred.	Asset stream reference properties
Static AF attributes **Note:** Static AF attributes configured as type 'Boolean' are not supported and will not be transferred.	Metadata properties on assets and asset types
Element templates	Asset types

These AF objects are not included in a PI to CONNECT data transfer and no CONNECT data services objects will be created from them:

- Analysis data reference attributes
- Attributes that reference a non-registered data source/Data Archive
- AF categories
- AF enumeration sets
- AF models/layers/connections/ports
- AF tables
- Custom units of measure (UOMs)
- Event frames
- Excluded attributes

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- Extended properties and annotations on assets not supporting AF versioning
- Formula data reference attributes
- Implicit PI points with attributes that reference other attributes
- Implicit PI points with multiple attributes on an AF element (only one attribute will be transferred)
- PI point arrays
- String builder attributes
- Table lookup attributes

When an AF element is transferred and a corresponding CONNECT data services asset is created, if any attributes are undefined in the element but have default attribute values defined in the applicable AF element template, the default values will be shown in the Asset Explorer.

Limitations of element search

When building an AF element transfer list in the portal, the AF element search does not detect element references, those elements shown in PI System Explorer with a shortcut icon next to them. The search returns only child elements that have reference types of either composition or parent-child. This means that while you can add any element to a transfer, there are limitations with how the search results are displayed, and, because of these limitations, each element appears only once in the search results.

Limitations of __ParentId and __ParentName

The asset resulting from a transfer will have only one `__ParentId` metadata item and one `__ParentName` metadata item. In AF an element can have multiple parents, though the additional parents are via element references.

As an example, say element "A" has a child element "A-Child" and element "B" has an *element reference* of "A-Child." The child element is distinctly different from the element reference. In PI System Explorer, element "A-Child" appears as a child of both A and B, albeit with the shortcut icon for B. If you include "A-Child" in a PI to CONNECT transfer, its `__ParentId` and `__ParentName` will refer only to A. Also, the type of the reference does not transfer. That is, there is no distinction between parent-child and composition reference types in the resultant asset.

Units of Measure (UOM) transfer

An AF attribute can have two different UOMs set, both the Default UOM and the Source UOM (also called DataReference UOM). CONNECT data services only allows for one UOM. PI to CONNECT considers an attribute's UOM to be its Source UOM if set; otherwise, it uses the default UOM. If both are set and they are different UOM classes, PI to CONNECT logs a warning that they are mismatched, but still uses the Source UOM.

Multiple PI point data reference attributes can reference the same PI point. If multiple attributes reference the same PI point but have different UOMs, a stream UOM is not transferred. If you update your AF attributes to resolve the conflict, the UOM will be transferred.

Custom units of measure (UOMs) do not transfer.

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Performance metrics: AF data transfer

The average data transfer rate is approximately 120-150 assets per second, and 1,000 assets per minute. Streams are created first, followed by AF element and asset data. If you use the same stream for various elements, the transfer time may be shorter.

Note: There may be some variance to these numbers.

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