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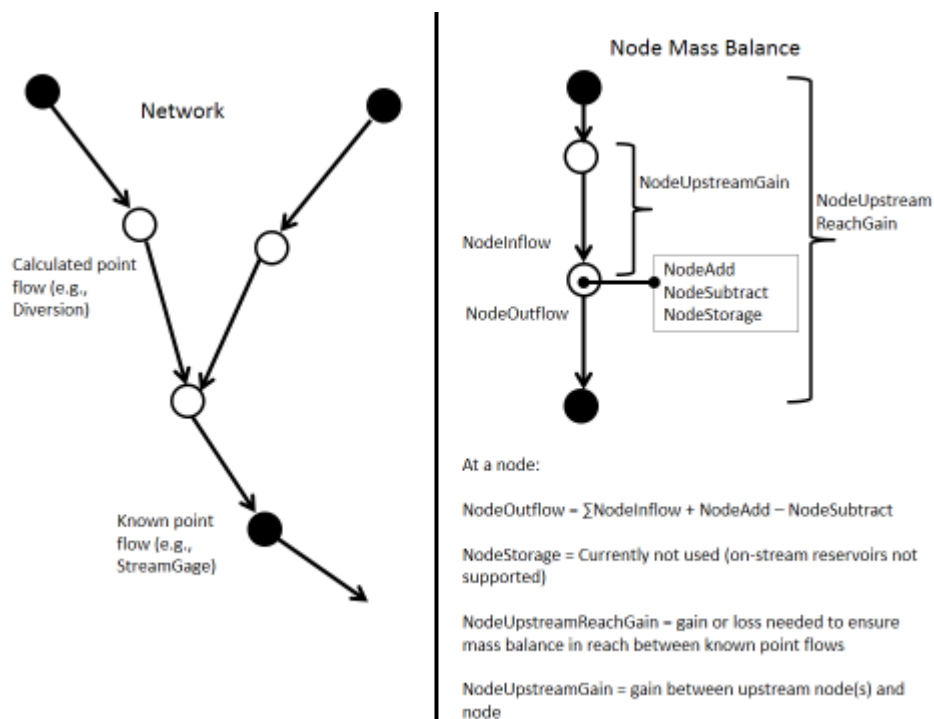
# Command Reference: CreateNetworkFromTable()

Create a network object from a table

Version 12.03.00, 2017-06-16

The `CreateNetworkFromTable()` command creates a network object from a table. Support for network objects is being phased into TSTool to allow processing of time series that are related to networks, such as river flow networks.

The following figure is taken from the `AnalyzeNetworkPointFlow()` command documentation for illustration. However, the network created by the `CreateNetworkFromTable()` command does not have knowledge of node type or calculations – this may be enhanced later.



AnalyzeNetworkPointFlow

The network is defined by simple “NodeID” and “DownstreamNodeID” notation and can be applied to either point-based networks (such as river networks with stations/sites) or area-based networks (such as upstream and downstream basins).

The following example shows a network that is defined in Excel as a table containing a list of node identifiers with associated properties. The NodeID and DownstreamNodeID columns are used by the command to create a navigable network object in program memory. The network can then be used with commands such as `SelectTimeSeries()` to select time series that were read for the network.

	A	B	C	D	E	F
1	NodeID	NodeName	NodeType	NodeDist	NodeWeight	DownstreamNodeID
2	06754000	KERSEY GAGE	StreamGage	2.0		0103816
3	0103816	EMPIRE RESERVOIR INLET (at reservoir)	Diversion	3.0	1.0	0100503
4	0100503	RIVERSIDE CANAL (at reservoir)	Diversion	4.0	1.0	0100507
5	0100507	BIJOU CANAL	Diversion	5.0	1.0	0100513
6	0100513	JACKSON LAKE INLET	Diversion	6.0	1.0	0100511
7	0100511	WELDON VALLEY DITCH	Diversion	7.0	2.0	0100512
8	0100512	JACKSON LAKE OUTLET DITCH	Return	8.0	2.0	0100514
9	0100514	FT MORGAN CANAL	Diversion	9.0	3.0	Instream1
10	Instream1	Instream Flow 1	InstreamFlow	10.0	3.0	06758500
11	06758500	WELDONA GAGE	StreamGage	11.0	3.0	0102900
12	0102900	WELDON VALLEY RETURN	Return	13.0	3.0	0100517
13	0100517	DEUEL AND SNYDER	Diversion	15.0	4.0	0100515
14	0100515	UPPER PLATTE BEAVER CNL	Diversion	17.0	4.0	06759500
15	06759500	FORT MORGAN GAGE	StreamGage	19.0	4.0	0100518
16	0100518	LOWER PLATTE BEAVER D	Diversion	26.0	4.0	0100519
17	0100519	TREMONT DITCH	Diversion	37.0	5.0	0100687
18	0100687	NORTH STERLING CANAL	Diversion	38.0	5.0	0100688
19	0100688	UNION DITCH	Diversion	49.0	5.0	06760000
20	06760000	BALZAC GAGE	StreamGage	50.0	5.0	

AnalyzeNetworkPointFlow\_InputTable

Network Definition Input Table

The following dialog is used to edit the command and illustrates the syntax of the command.

**Edit CreateNetworkFromTable() Command**

This command creates a node network from a table. Each network node has one "downstream" node but can have multiple "upstream" nodes. A node network typically represents points (e.g., stations) or areas (e.g., basins). The network can be used for simple modeling such as mass balance. See also the `AnalyzeNetworkPointFlow()` command. The network can also be used for data model navigation and to select time series for further processing, for example select time series for nodes upstream. **Command features are experimental. Initial features are intended to provide basic network initialization and support data navigation. Features of this command and other network commands, including `AnalyzeNetworkPointFlow()` will be integrated in the future.**

General | **Map Table Columns to Network Nodes** | Define Node Type Behavior

Specify general information about the network that is created.  
There must be one downstream node that is the endpoint of the basin. Use the `DefaultDownstreamNodeID` to provide an identifier for this node.

Network ID:  Required - network identifier.  
 Network name:  Required - network name.  
 Default downstream node ID:  Required - needed to allow network navigation.

Command:

```
CreateNetworkFromTable (NetworkID="WaterSupplyBasins",NetworkName="Colorado water supply basins used in
CDSS SNODAS
Tools",DefaultDownstreamNodeID="OutOfState",TableID="Connectivity",NodeIDColumn="LOCAL_ID",NodeNameCol
umn="LOCAL_NAME",DownstreamNodeIDColumn="DOWNSTREAM_LOCAL_ID")
```

Cancel OK

CreateNetworkFromTable\_General

### CreateNetworkFromTable() Command Editor – “General” Tab

General | **Map Table Columns to Network Nodes** | Define Node Type Behavior

Specify table columns that provide data to define the network:  
 NodeID - is typically a location identifier (and is used to match time series in `SelectTimeSeries()`)  
 NodeType - is used to define analysis behavior (see "Define Node Type Behavior" tab) - currently not used  
 NodeDistance and NodeWeight - are used to distribute reach gain/loss back to nodes in the reach - currently not used

Table ID:  Required - table containing network node information.  
 Node ID column:  Required - column name for node IDs.  
 Node name column:  Optional - column name for node names.  
 Node type column:  Required - column name for node types.  
 Node group column:  Optional - for example identifier for stream or larger basin.  
 Node distance column:  Optional - used if GainMethod requires distance.  
 Node weight column:  Optional - used if GainMethod requires weight.  
 Downstream node ID column:  Required - column name for downstream node IDs.

CreateNetworkFromTable\_Map

### CreateNetworkFromTable() Command Editor – “Map Table Columns to Network Nodes” Tab

General	Map Table Columns to Network Nodes	Define Node Type Behavior
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**These parameters are not currently enabled and may be removed.**

Specify node type behavior for the point flow analysis. Each node type indicates how mass balance is calculated for the type.  
Time series for each node by default are matched as follows (however, specifying TSID/alias via the "TSID/Alias" tab is recommended):

- Location ID - match Node ID column
- Data source - currently not matched
- Data type - match data types listed below, specific to node type (separate multiple values with commas)
- Interval - match Interval parameter

In the future additional node behaviors will be added, for example to handle reservoirs.

Node types that add:	<input type="text"/>	Optional - node types that add.
Default node time series data types that add flow:	<input type="text"/>	Optional - node time series data types that add.
Node types that subtract flow:	<input type="text"/>	Optional - node types that subtract.
Default node time series data types that subtract:	<input type="text"/>	Optional - node time series data types that subtract.
Node types that set outflow:	<input type="text"/>	Optional - node types that set outflow.
Default node time series data types that set outflow:	<input type="text"/>	Optional - node time series data types that set outflow.
Node types with no change:	<input type="text"/>	Optional - node types where inflow=outflow.

AnalyzeNetworkPointFlow\_Behavior

### CreateNetworkFromTable () Command Editor – “Define Node Type Behavior” Tab

The command syntax is as follows:

```
CreateNetworkFromTable (Parameter=Value, ...)
```

#### Command Parameters

Parameter	Description	Default
NetworkID	Identifier for the network being created.	None – must be specified.
NetworkName	Descriptive name for network being created.	None – must be specified.
DefaultDownstreamNodeID	Default downstream node identifier to ensure that the network can connect to a final downstream node.	None – must be specified.
TableID	The identifier for the table defining the network.	None – must be specified.
NodeIDColumn	The name of the column in the network table containing node identifiers. Node identifiers will be used for the location ID part of time series identifiers.	None – must be specified.
NodeNameColumn	The name of the column in the network table containing node names.	
NodeTypeColumn	The name of the column in the network table containing node types. The node type is used to specify what calculations will occur for the node. <b>Currently not used.</b>	None – must be specified.
NodeGroupColumn	Used to group nodes, for example a stream reach or larger drainage basin. <b>Currently not used.</b>	
NodeDistanceColumn	The name of the column in the network table containing node distance. The distance is the measure from the most downstream node and	

Parameter	Description	Default
	is used when GainMethod=Distance or GainMethod=DistanceWeight. <b>Currently not used.</b>	
NodeWeight Column	The name of the column in the network table containing node weights, which is used to distribute gain/loss when GainMethod=Weight or GainMethod=DistanceWeight (in the latter case the weight is the rate to use). <b>Currently not used.</b>	
Downstream NodeIDColumn	The name of the column in the network table containing downstream node identifiers. This information defines the connectivity of the network.	None – must be specified.
NodeAddTypes	Node types for which time series are added to the node's inflow to compute outflow, for example the Return node type in the above table example. The NodeTypeColumn table column is checked to determine the type for each node in the network. <b>Currently not used.</b>	No additions will occur.
NodeAddDataType	The time series data type to match for the node. The data type is used with the NodeID as the location ID to match available time series to use as input. The TSIDColumn will override the default matching. <b>Currently not used.</b>	No additions will occur.
NodeSubtract Types	Node types for which time series are subtracted from the node's inflow, for example the Diversion node type in the above table example. The NodeTypeColumn table column is checked to determine the type for each node in the network. <b>Currently not used.</b>	No subtractions will occur.
NodeSubtract DataType	The time series data type to match for the node. The data type is used with the NodeID as the location ID to match available time series to use as input. The TSIDColumn will override the default matching. <b>Currently not used.</b>	No subtractions will occur.
NodeOutflow Types	Node types for which time series outflows are set to the node's time input time series, for example the Streamflow node type in the above table example. The NodeTypeColumn table column is checked to determine the type for each node in the network. <b>Currently not used.</b>	No known flows will be set – gain/loss cannot be computed.
NodeOutflow DataType	The time series data type to match for the node. The data type is used with the NodeID	No subtractions will occur.

Parameter	Description	Default
	as the location ID to match available time series to use as input. The <code>TSIDColumn</code> will override the default matching. <b>Currently not used.</b>	
NodeFlow ThroughTypes	Node types for which time series outflows are set to the node's inflow, for example the <code>InstreamFlow</code> node type in the above table example. The <code>NodeTypeColumn</code> table column is checked to determine the type for each node in the network. <b>Currently not used.</b>	No known flows will be set – gain/loss cannot be computed.