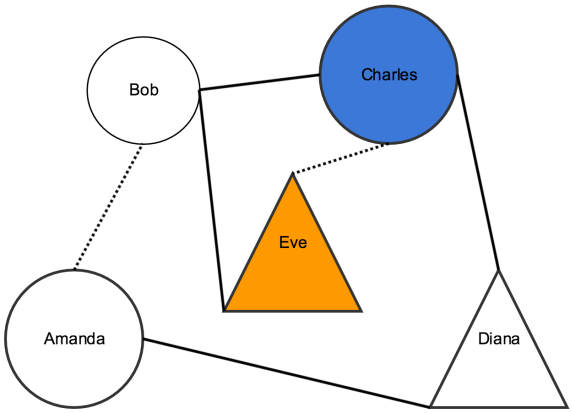
Network

- Spreadsheet Format
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Spreadsheet Format

You build network visualizations using network graphs. Here's a visual representation of a network graph:



Network graphs are a series of *nodes* connected by edges or *links.*

In the example above, the shapes are all nodes. The lines that connect two shapes are links. Nodes and links are components of the graph.

In our example, links and nodes also have different styling. For example, some links are dotted lines, and some are solid lines. Some nodes are circles and some are triangles. In Mandala Visuals, the styling is also a component of your network graph.

Each row in the Network spreadsheet represents a graph component. Row formatting depends on the component type. You can have as many components as you like, as long as they are in one of these categories:

- "node" – places a node
- "link" – places a link
- "class" – styles a node or link by creating a specific styling class, or styling type

You can add components in any order.

If you have used a network-visualization tool like Cytoscape or Gephi, you should know that the data structure for this tool is a little different in that it combines nodes and edges into a single table. This is to say that the content of the first column always is a categorical descriptor (node, link, or class) rather than a specific entity (like a specific person's name). "Node" has the same meaning as it does in Gephi or Cytoscape; and "link" is equivalent to "edge". In this Shiva network tool, however, "class" establishes the attributes that are associated with nodes and edges. Attributes include the properties that are associated with the nodes. In the network diagram above, for example, Charles's node has a shape attribute (circle), a color attribute (blue), and a size attribute.

To add nodes, make a row with the following data:

	Column 1	Column 2	Column 3	Column 4	Column 5
Data Type	plain text	plain text	plain text	plain text	plain text
Contents	"node" **Note:** • This sets the component type. • "node" must be included in the first column of every row that defines a node	The id for the node **Note:** • Make ids unique and specific to each node • Ids do not appear on the graph, but are used to create links between nodes	The label for the node **Note:** • Labels appear on the node in visualization	The name of the node's class type. **Note:** • To define class types, create a "node-class" row (see the node class table) • This determines the node's style	Tooltip text for the node **Note:** • This text will appear when a user hovers over a node.

To add links that connect two nodes, make a row with the following data:

	Column 1	Column 2	Column 3	Column 4
Data Type	plain text	plain text	plain text	plain text

Contents	"link" **Note:** • This sets the component type. • "link" must be included in the first column of every row that places a link	The id for the first node in the relationship **Note:** • Define node ids when you create nodes • Learn more about node ids in Column 2 of the "add nodes" section of this guide	The class type for the link **Note:** ◦ To define class types, create a "link-class" row (see the link class table) ◦ This determines the link's style ◦ The class type describes how the nodes are related	The id for the second node in the relationship **Note:** • Define node ids when you create nodes • Learn more about node ids in • Column 2 of the "add nodes" section of this guide

To style nodes, make a row with the following data:

	Column 1	**Column 2**	**Column 3**	**Column 4**
Data Type	plain text	plain text	plain text	plain text
Contents	"class" **Note:** • This sets the component type. • "class" must be included in the first column of every row that defines a style	The name of the class type **Note:** • This lets you quickly reference the node styling when you create a node • Learn more at Column 4 of the "add nodes" section	The property name **Note:** ◦ This defines what node style element the class will affect (for example, color or shape) ◦ Find a full list of property names you can use in the Appendix below	The value for the property in Column 3 **Note:** ◦ This defines what style the node will have, depending on the property. For example, if Column 3 was "color", this Column might be "blue" ◦ Find full list of property names you can use in the Appendix below

To style links, make a row with the following data:

	Column 1	**Column 2**	**Column 3**	**Column 4**
Data Type	plain text	plain text	plain text	plain text

Contents	"class" **Note:** • This sets the component type. • "class" must be included in the first column of every row that defines a style	The name of the class type **Note:** • This lets you quickly reference the link styling when you create a link • Learn more at Column 4 of the "add links" section	The property name **Note:** ○ This defines what link style element the class will affect (for example, color or shape) ○ Find a full list of property names you can use in the Appendix below	The value for the property in Column 3 **Note:** ○ This defines what style the link will have, depending on the property. For example, if Column 3 was "color", this Column might be "blue" ○ Find full list of property names you can use in the Appendix below

Customization Options

Go to Common Customization Options to see more settings.

- Height
- Width
- Node distance
- Node charge
- Node gravity
- Node strength
- Node shape
- Popup show time
- Node size
- Node color
- Node property names and allowed values:
- Link property names and allowed values:

Height

determines the height of the graph

- Type in a number

Width

determines the width of the graph

- Type in a number

Node distance

determines the distance between the nodes

- Type in a number to set the distance
- A larger number will spread the nodes farther apart

Node charge

determines whether nodes are repulsed or attracted to each other

- Type in a positive number to make the nodes attract; type in a negative number to repulse nodes
- Attractive nodes will spread nodes apart; repulsive nodes will overlap nodes with closer data values

Node gravity

controls the distance the nodes appear from the center of the graph

- Higher numbers make the nodes move toward the center; lower numbers make the nodes move away

Node strength

controls the length of the links

- Type in a number between 0 and 100
- Higher numbers make longer links

Node shape

sets the shape of the nodes

- Choose from a list of shapes in the drop-down menu

Popup show time

controls the number of seconds a pop-up dialogue box shows up

- Type in a number of seconds

Node size

controls the radius of the nodes

- Type in a higher number to create larger nodes or a lower number to create smaller nodes

Node color

sets the color a node will have if there are hidden nodes

- Click the colored square to choose a color
- Learn more about Cchoosing colors

Appendix

Node property names and allowed values:

property name	definition	allowed values
type	The shape of the node	circle, rectangle, square, ellipse, triangle, star
color	The color of the node	Either an RGB color expressed in hexadecimal numbers prefixed with a '#' or one of these color names: blue, red, green
dim	The size of the node in pixels. Specifically, the radius of a circle, half the length of the side of a square, half the base and half the height of a triangle or the length of a side of a star.	A number
alpha	The transparency of the node	A number between 0 and 1, where 1 is maximally opaque

Link property names and allowed values:

property name	definition	allowed values
type	The style of line	arrow, line
lineWidth	The width of the link in pixels	A number
color	The color of the link	Either an RGB color expressed in hexadecimal numbers prefixed with a '#' or one of these color names: blue, red, green
alpha	The transparency of the link	A number between 0 and 1, where 1 is maximally opaque