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*Accessibility Features of the SAS Social Network Analysis Server*  

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Accessibility Features of the SAS Social Network Analysis Server

Overview

For information about the accessibility of any of the products mentioned in this document, see the documentation for that product.

The SAS Social Network Analysis Server has been tested with assistive technology tools. It includes accessibility and compatibility features that improve the usability of the product for users with disabilities. (Some accessibility issues remain and are noted below.) These features are related to accessibility standards for electronic information technology that were adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973 (2008 draft proposal initiative update). Applications are also tested against Web Content Accessibility Guidelines (WCAG) 2.0, part of the Web Accessibility Initiative (WAI) of the Worldwide Web Consortium (W3C). For detailed information about the accessibility of this product, send e-mail to accessibility@sas.com or call SAS Technical Support.

Documentation Format

Please contact accessibility@sas.com if you need this document in an alternative digital format.
Keyboard Shortcuts

The following table contains the keyboard shortcuts for the application.

<table>
<thead>
<tr>
<th>Action</th>
<th>Keyboard Shortcut for Microsoft Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoom in</td>
<td>Ctrl+plus sign</td>
</tr>
<tr>
<td>Zoom out</td>
<td>Ctrl+minus sign</td>
</tr>
<tr>
<td>Reset the zoom</td>
<td>Ctrl+0</td>
</tr>
</tbody>
</table>

Exceptions to Accessibility Standards

Exceptions to accessibility standards are documented in the following table.

<table>
<thead>
<tr>
<th>Accessibility Issue</th>
<th>Workaround</th>
</tr>
</thead>
<tbody>
<tr>
<td>When a modal secondary window is open in the application in Internet Explorer or Safari, JAWS and VoiceOver might be able to access the controls (which should be blocked) in the background of the application.</td>
<td>Use a different browser, such as Firefox.</td>
</tr>
<tr>
<td>There is no visual indication of focus.</td>
<td></td>
</tr>
<tr>
<td>Screen readers might read extraneous information when using Microsoft Internet Explorer.</td>
<td></td>
</tr>
<tr>
<td>For items that can be expanded or collapsed in the Filters pane, JAWS does not read the information available after the item is expanded.</td>
<td></td>
</tr>
<tr>
<td>Accessibility Issue</td>
<td>Workaround</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------</td>
</tr>
<tr>
<td>The social network analysis diagram node structure is not usable by keyboard only. A keyboard-only user might not be able to perform tasks directly associated with the structure and might be provided with less information than a mouse user as a result.</td>
<td></td>
</tr>
<tr>
<td>The <strong>Expand Pane</strong> and <strong>Collapse Pane</strong> buttons of the <strong>Filter Pane</strong> are not identified with function or purpose.</td>
<td></td>
</tr>
<tr>
<td>The sliders associated with the currency filter and the number filter are not labeled properly for a screen reader. There is no indication of purpose read for either slider.</td>
<td></td>
</tr>
<tr>
<td>The components in the <strong>Time and Scope Controller</strong> area of the social network analysis diagram are not properly labeled and, therefore, they are not announced correctly by JAWS. The user is provided with information about function and how to interact with the <strong>Time Slider</strong>, but no indication of purpose is provided.</td>
<td></td>
</tr>
</tbody>
</table>
Introduction

Solution Overview

The SAS Social Network Analysis Server is a flexible solution that is used to visualize relationships that might be indicative or predictive of fraud.

Purpose of This Document

This document is the investigator guide for the SAS Social Network Analysis Server.

Note: Each deployment of the SAS Social Network Analysis Server is configured to meet the needs of a specific customer. The information and windows, including the color and layout themes, shown in this document are from demonstration projects that SAS developed to show the functionality of the SAS Social Network Analysis Server and are only examples.
All options, such as node colors and meanings, are defined and provided in advance by the report that is authored by a business analyst. Configuration options and custom stored processes are discussed in the companion guide, SAS Social Network Analysis Server: Administration Guide.

**Target Audience**

The target audience for this document is the investigator. Investigators use the SAS Social Network Analysis Server to review and manage network associations. These networks are generated primarily to help detect or prevent fraud.

Using the information in this document, investigators use the SAS Social Network Analysis Server to do the following:

- perform management and review tasks of the social network analysis diagram, including the following:
  - view, annotate, edit, and rearrange network nodes
  - connect entities with links and add new nodes and links to the social network
  - save modified social network analysis diagrams for later recall and continued management
- create and print custom views of the social network analysis diagram

**Related Documents**

Other documents related to the SAS Social Network Analysis Server include the following:

- *SAS Social Network Analysis Server: Administration Guide*
- *SAS Social Network Analysis Server: Installation and Configuration Guide*
This section provides information about accessing the solution and describes the functionality of the SAS Social Network Analysis Server as it applies to the typical investigator's role of interacting with the social network analysis diagram.

Even though the user interface for the SAS Social Network Analysis Server is configurable, some of the user interface features are common for most deployments. This section describes the components of the interface. Detailed information for performing tasks can be found in “Network Visualization Features and Functions” on page 32.

Investigators can access the social network analysis diagram to learn more about the entity relationships and to add nodes, links, and annotations to refine the diagram. The following actions are routinely performed for investigating network relationships:
- Access the social network analysis diagram that represents a specific relationship.
- Review the social network analysis diagram that shows the relationships.
- Rearrange nodes and links to organize the view in a desired layout. This layout can be saved and later retrieved from the database for further analysis. Also, if the updated diagram is no longer needed, you can open the original (pre-modified) diagram instead.
- If they are needed and if the Comment Manager is enabled, review and add comments and attachments to a node.
- If they are needed, add nodes, links, and annotations to a social network analysis diagram. These modifications can be saved and later retrieved for continued review and updates.

Access the SAS Social Network Analysis Server

The SAS Social Network Analysis Server is a web application that can operate inside of compatible SAS solutions, generally as an inclusion in the SAS Fraud Framework. Contact your SAS administrator for the web address and specifications for the browser (including version, operating mode, and so on) to use to access the SAS Social Network Analysis Server either as a standalone solution or as a component within a compatible SAS Fraud Framework solution.

Investigators are granted access based on the user privileges that are controlled through user authorization. Logon selections are fully configurable, based on user requirements.

The method of accessing the SAS Social Network Analysis Server is either through direct browser navigation to a specific URL or is based on the configuration of the hosting solution.
Session Time-Out

Session time-out is an administrator-configurable option in the SAS Social Network Analysis Server. When the SAS Social Network Analysis Server is included as a component within the SAS Fraud Framework, any session time-out warning is relevant to the solution as a whole and not specific to the SAS Social Network Analysis Server alone.

Display 2.1  Example of a Session Time-Out Window

During an active user session, the solution keeps track of all user activities that require the server and resets the time-out each time one of these activities occurs. Activities that do not require server response are not included in actions that keep the session alive. Activities that require the server include the following:

- saving a network or any item, task result, or filter configuration
- running a network layout option from the menu
- adding nodes to the social network analysis diagram
- opening or reopening a network, expanding node groups, and accessing node details

Simply rearranging nodes in the network does not register as activity and, therefore, does not keep the session from timing out. A time-out warning is generally displayed at some administrator-defined interval before the session times out. This enables you to extend your session and continue working.

Note: When a session ends, the SAS Logon window is displayed. If the SAS Social Network Analysis Server is being operated as a standalone solution, you will not be able
to log on successfully by entering your credentials. You must enter the complete URL originally used to access the SAS Social Network Analysis Server. The access URL includes parameters to retrieve a specific social network analysis diagram.

**Interface Description and Integration**

The network viewer enables you to view and manage relationships represented by the social network analysis diagram.

**Social Network Analysis Network Viewer**

**Overview of Network Viewer Features**

The network viewer is divided into several seamless regions with functionality to enable you to perform all necessary tasks.

*Display 2.2  Example of a SAS Social Network Analysis Network Viewer*
Table 2.1  SAS Social Network Analysis Network Viewer Sections

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Filters (network highlighting) pane</td>
<td>If configured for your deployment, the <strong>Filters</strong> pane of the network viewer enables you to highlight the nodes meeting the indicated filter criteria. The <strong>Filters</strong> pane is expanded by clicking the <strong>Expand Pane</strong> button (☞) at the top of the pane and is collapsed by clicking the <strong>Collapse Pane</strong> button (☞) at the top of the pane. For additional information, see “Social Network Filters Pane: Network Highlighting” on page 8.</td>
</tr>
<tr>
<td>B. Social network analysis toolbar</td>
<td>In general, the toolbar enables you to refine the diagram (by adding node and links or editing existing nodes and links) and to manipulate the view for optimized presentation. For additional information, see “SAS Social Network Analysis Diagram Toolbar” on page 16.</td>
</tr>
<tr>
<td>C. Nodes, links, and relationships</td>
<td>The nodes and entity relationships are viewable in the social network analysis diagram. The social network analysis diagram represents the relationship of the entities. The look and many of the characteristics of this diagram can be controlled or modified using the toolbar. The icons that represent the diagram are customizable and might not resemble the diagrams displayed in this guide. For additional information, see “Nodes, Links, and Relationships” on page 18.</td>
</tr>
<tr>
<td>D. Properties pane</td>
<td>The <strong>Properties</strong> pane is displayed to the right of the social network analysis diagram. It is collapsed by default and can be expanded by clicking the <strong>Expand Pane</strong> button (☞) at the top of the pane. It is collapsed by clicking the <strong>Collapse Pane</strong> button (☞) at the top of the pane. When the <strong>Properties</strong> pane is expanded, it displays information about a selected node, link, or group. It is also through the <strong>Properties</strong> pane that node annotations and link labels can be added or edited. The <strong>Properties</strong> pane also enables you to expand the <strong>Show Details</strong> pane at the bottom of the window to display details about a selected node. For additional information, see “Properties Pane” on page 25.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>E. Time and scope controller</td>
<td>If your solution is configured for this functionality, the time and scope view can be controlled by using the time slider, the jump-to functionality, and the <strong>Cumulative</strong> and <strong>Marginal</strong> buttons found at the bottom of the diagram.</td>
</tr>
<tr>
<td>F. Show Details pane</td>
<td>The <strong>Show Details</strong> pane, not shown in Display 2.2 on page 6, can be displayed beneath the time and scope controller. This area is configured by the administrator and is completely customizable. The <strong>Show Details</strong> pane can display the Comment Manager as well as tables and graphs specific to the social network analysis diagram.</td>
</tr>
<tr>
<td></td>
<td>Social Network Filters Pane: Network Highlighting</td>
</tr>
</tbody>
</table>
The range filter displays values as either decimals or as integers based on the number of values included between the range. When the number of values is greater than or equal to ten, values are displayed as integers. When the number of values is less than ten, the values are displayed as decimals. For example, in a case where the minimum value is 5 and the maximum value is 15, then the number of values between the minimum and the maximum is ten. Therefore, the range is displayed with integers. In a case where the minimum is -2.5 and the maximum is 2.5, then the number of values between the minimum and the maximum is five. Therefore, in this instance, the range values are displayed as decimals.

Here are several examples displaying different aspects of network highlighting.

In Display 2.3, the Filters pane is expanded to display the configured filter criteria for the social network analysis diagram. Generally, the administrators configure the default settings to display a ‘no criteria met’ view. After the filters are populated or manipulated,
the nodes and links of the diagram are highlighted to show which items meet the indicated criteria.

Display 2.3  SAS Social Network Analysis Diagram with Expanded Filters Pane
In Display 2.4, the range slider for the Overall Score filter has been adjusted to reflect a range of 0–53. As a result, the social network analysis diagram displays the appropriate nodes and links as highlighted to indicate that they meet the criteria.
In Display 2.5, the range slider for the Overall Rank filter has been adjusted to reflect a range of 0–453. As a result, the social network analysis diagram displays the appropriate nodes and links as highlighted to indicate that they meet the criteria.

**Display 2.5** SAS Social Network Analysis Diagram with Filtered Overall Rank Criteria Highlighted in Diagram

In Display 2.6, the range slider for the Overall Rank filter has been adjusted to reflect a range of 0–355, and the time slider, in Cumulative mode, indicates an end date of June 9, 2002. As a result, the social network analysis diagram displays the appropriate nodes and links as highlighted to indicate that they meet the criteria. The nodes that are
inactive during this time period, shown as dimmed nodes, are also highlighted if they meet the criteria.

**Display 2.6** SAS Social Network Analysis Diagram with Date-Adjusted Filtered Overall Rank Criteria Highlighted in Diagram

In **Display 2.6**, the range slider for the Overall Rank filter has been adjusted to reflect a range of 0–355, and the map view has been enabled. As a result, the social network analysis diagram displays the appropriate nodes and links as highlighted, superimposed on the map, to indicate that they meet the criteria. Only nodes that have longitude and latitude values are displayed on the map. Those nodes that cannot be displayed
because of non-existent longitude and latitude values are listed in the See Nodes window.

**Display 2.7** SAS Social Network Analysis Diagram with Map View and Filtered Overall Rank Criteria Highlighted in Diagram

The filters available in the Filters pane are customized for your deployment. If an administrator has not defined network highlighting filters, then the Filters pane will not display filters.

**Network Highlighting Filter Preferences**

The filter preferences are controlled by a series of buttons at the top of the pane. Here are the details related to the Filters pane preferences.
Table 2.2  Filter Preferences Buttons

<table>
<thead>
<tr>
<th>Button</th>
<th>Name</th>
<th>Use and Description</th>
</tr>
</thead>
</table>
| 🔄️     | Apply Filters         | Applies the saved settings to the social network analysis diagram that is surfaced in the interface.  
|        |                       | **Note:** You must click **Apply Filters** to retrieve saved settings each time the page is accessed. |
| ✕️     | Clear Search          | Clears any changes made in the **Filters** pane during this session. User-saved preferences are not affected. |
| 🎨     | Save Current Filters  | Saves the current settings for the current user of the current social network analysis diagram. |
| 🔄️     | Restore Filters       | Removes any saved user filter preferences and clears the current settings (thereby, returning all settings to the default settings). |

Depending on the task you are performing, you might be presented with a confirmation message when you set and save the filter preferences. In addition, here are the rules that apply to filter use and operation:

- Only one filter preference can be saved at a time. Saving a new filter preference replaces the stored one without warning.
- Filter preferences are managed and saved for the current user and are not accessible by other users.
- Applied filter preferences are valid only for the current social network analysis diagram.
- After filters are applied, they remain in effect until a new page is loaded or the user exits the application. When the page for which filters were applied is revisited or retrieved, then the user must click **Apply Filters** in order to see the results.
- Saved filter preferences are not loaded automatically when the solution is launched. If filters have been saved for a social network analysis diagram, the user must click **Apply Filters** in order to see the results when the diagram is accessed.
SAS Social Network Analysis Diagram Toolbar

The social network analysis diagram contains a button toolbar at the top of the diagram.

Display 2.8  Example Social Network Analysis Diagram Toolbar

The toolbar is standard, and the operation associated with a button can be performed only when it is an allowable operation. For example, the Add Node button is always present. However, if you click the Add Node button before selecting a node that will be the source node for the addition, a message indicating that this is not allowed is displayed. In other instances, a button might be dimmed if the associated feature is not implemented or a task cannot be performed in this view. For example, if the Map feature is not enabled for your deployment, then the Map button is dimmed and inaccessible. If the Map view is enabled, when you enter the Map view, all standard buttons other than the Hide Map button and the Print button are disabled.

Note: Although the Print button is enabled in the Map view, printing from this view does not print the map. Only the network is printed. Depending on your browser and operating system, you might be able to use the browser’s native print feature to obtain a printed version of the network diagram superimposed on the map background.

Each button description is shown when you position your mouse pointer over the button. This guide provides additional information, as appropriate, in sections where a toolbar button can be used to execute an operation. Here is a high-level description of each toolbar button.

Table 2.3  Social Network Analysis Diagram Toolbar Buttons

<table>
<thead>
<tr>
<th>Button</th>
<th>Name</th>
<th>Use and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Save Network</td>
<td>Saves the current social network analysis diagram to the database.</td>
</tr>
<tr>
<td>Button</td>
<td>Name</td>
<td>Use and Description</td>
</tr>
<tr>
<td>--------</td>
<td>---------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>Selecting the down arrow (▼) next to the <strong>Open</strong> button displays selections to retrieve the original network graph (from the stored process) or the most recently modified network graph (from the database).</td>
</tr>
<tr>
<td></td>
<td>Run Layout</td>
<td>Selecting the down arrow (▼) next to the <strong>Run Layout</strong> button displays selections to enable you to choose a layout to impose on the current diagram.</td>
</tr>
<tr>
<td></td>
<td>Add Node</td>
<td>After an existing node is selected, enables you to add a new node.</td>
</tr>
<tr>
<td></td>
<td>Add Link</td>
<td>After two nodes are selected, enables you to add a new link.</td>
</tr>
<tr>
<td></td>
<td>Edit Entity</td>
<td>After an entity is selected, enables you to update the current entity information and specifications.</td>
</tr>
<tr>
<td></td>
<td>Delete Entity</td>
<td>After an eligible entity is selected, enables you to delete the entity from the network view.</td>
</tr>
<tr>
<td></td>
<td>Group Nodes</td>
<td>After eligible nodes are selected, enables you to fold the selected nodes into an individual node that represents the group.</td>
</tr>
<tr>
<td></td>
<td>Regroup Nodes</td>
<td>Enables you to regroup a collection of nodes.</td>
</tr>
<tr>
<td></td>
<td>Collapse</td>
<td>Enables you to collapse hidden nodes after they have been expanded.</td>
</tr>
<tr>
<td></td>
<td>Expanded</td>
<td>Nodes</td>
</tr>
<tr>
<td></td>
<td>Show Map</td>
<td>If enabled for your network, displays a map in the background and superimposes all eligible nodes onto the map.</td>
</tr>
<tr>
<td></td>
<td>Hide Map</td>
<td>If a map is displayed, enables you to hide the map, while leaving the nodes and links in view.</td>
</tr>
<tr>
<td></td>
<td>Home</td>
<td>Enables you to re-center the diagram. In addition, selecting the down arrow (▼) next to the <strong>Home</strong> button displays options to enable to you pan left, right, up, or down.</td>
</tr>
<tr>
<td></td>
<td>Zoom In</td>
<td>Enables you to zoom in on the diagram.</td>
</tr>
</tbody>
</table>
### Nodes, Links, and Relationships

A social network analysis diagram consists of a series of nodes connected by links, where the nodes are entities represented by icons, and the link represents the start and end time of entity involvement. The node icon might represent a single entity (person), a transaction (purchase), or any other relevant item.

The social network analysis diagram shows the relationship between a specific entity and other related entities. The entity icons are specific to your deployment and might contain representations for items such as patients, doctors, claims, and provider.
The following figure shows a sample social network analysis diagram.

**Display 2.9  Sample Social Network Analysis Diagram**

An ID uniquely identifies each node and link in a social network analysis diagram. An ID is assigned to each node and link, but the IDs of entities that you add can be changed through the Graph Entities Wizard in the interface. In contrast, a label is a non-required entry that can contain descriptive text about a particular node or a specific link and does not have to be a unique entry. The initial text in a label might be controlled by subject matter experts in the business domain of interest. Investigators can add, delete, and edit label text through the interface.

Annotations are notes attached to nodes. Investigators can use the annotation feature to add additional information to selected nodes.

**Note:** Annotations and labels are text-only entries. For example, you cannot include HTML markup in an annotation or in a label.

Links do not support the annotation feature.

Here is an example showing a selected node displaying the associated label (A) and the annotation (B).
Display 2.10  Node Label and Node Annotation

Here is an example showing a selected link (A) displaying the associated label (B).

Display 2.11  Link Label

Note: Labels, annotations, and IDs can also be managed through the Graph Entities Wizard.

New nodes and links can be added to the diagram by using the Add Node feature. Selecting an existing node and then choosing Add Node from the toolbar brings up the Graph Entities Wizard. The Graph Entities Wizard contains two tabs, Add Node and Add Link, and is displayed with Read-Only fields dimmed and inaccessible.
Using the **Add Node** and **Add Link** tabs of the Graph Entities Wizard, you can add nodes and links and you can customize the appearance of the added nodes and links to monitor relationships that might not be indicated in your current data source.
### Table 2.4  Node Properties

<table>
<thead>
<tr>
<th>Node Property</th>
<th>Description</th>
<th>Required?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Id</strong></td>
<td>A series of characters used to distinguish the node. Assigned by default, but can be changed for nodes that you add through the interface.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> By default, each node ID assigned is unique per node. If you change or create a node ID for an added node, you are encouraged to ensure that it is not a duplicate ID.</td>
<td></td>
</tr>
<tr>
<td><strong>Label</strong></td>
<td>Descriptive text for the node.</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Labels can contain text only. For example, HTML markup is not supported.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If you exceed the maximum character length of the <strong>Label</strong> field, a message is displayed. The valid length of the field is contingent upon the specified locale.</td>
<td></td>
</tr>
<tr>
<td><strong>Annotation</strong></td>
<td>A comment or details for the node. Text can be modified at the <strong>Annotation</strong> text box of the <strong>Properties</strong> pane of the social network analysis diagram.</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Annotations can contain text only. For example, HTML markup is not supported.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If you exceed the maximum character length of the <strong>Annotation</strong> field, a message is displayed. The valid length of the field is contingent upon the specified locale.</td>
<td></td>
</tr>
<tr>
<td><strong>Border Size</strong></td>
<td>Width of the border surrounding the node. The default is selected if border size is not indicated.</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Latitude</strong></td>
<td>If the node is to be displayed in the Map view, then a latitude value is required.</td>
<td>No</td>
</tr>
<tr>
<td><strong>Longitude</strong></td>
<td>If the node is to be displayed in the Map view, then a longitude value is required.</td>
<td>No</td>
</tr>
<tr>
<td>Node Property</td>
<td>Description</td>
<td>Required?</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Change Dates</td>
<td>The Change Dates controls enable you to specify the parameters of the node that you are adding to the social network analysis diagram.</td>
<td></td>
</tr>
</tbody>
</table>

- **Date.** Enabled after a second instance of the node is added. This field is needed only if (a) you are specifying properties for an additional instance of a single node, and (b) one or more node properties change at a specific date, indicated by this change date. Conditionally required.

- **Color.** The default is selected if a background color is not chosen. Required.

- **Border Color.** Color surrounding the node. The default is selected if a border color is not chosen. Required.

- **Icon.** A graphical representation of the node entity. Required.

For information about adding change dates, see “Adding Change Dates to Nodes” on page 56.
### Table 2.5  Link Properties

<table>
<thead>
<tr>
<th>Link Property</th>
<th>Description</th>
<th>Required?</th>
</tr>
</thead>
</table>
| **Id** | A series of characters used to distinguish the link. Assigned by default, but can be changed for links that you add through the interface.  
**Note:** By default, each link ID assigned is unique per link. If you change or create a link ID for an added link, you are encouraged to ensure that it is not a duplicate ID. | Yes |
| **To Node** | Destination of the link. Automatically assigned based on initial selections. This cannot be changed. | Yes |
| **From Node** | Origin of the link. Automatically assigned based on initial selections. This cannot be changed. | Yes |
| **Label** | Descriptive text for the link.  
**Note:** Labels can contain text only. For example, HTML markup is not supported.  
**Note:** If you exceed the maximum character length of the **Label** field, a message is displayed. The valid length of the field is contingent upon the specified locale. | No |
| **Thickness** | Width of the link. The default is selected if the link thickness is not indicated.  
**Note:** Line widths are relative widths and are not associated with a unit of measure. This means that the width of the lines scale as the zoom-in and zoom-out feature is used, but a line width with a higher value will always appear thicker than a line width with a lower value. | Yes |
<p>| <strong>Type</strong> | Links can be defined as either a standard link or a vector link. Standard links connect two nodes, while vector links point from one node to another node. | Yes |
| <strong>Start Date</strong> | Date upon which the link became active. If there is no start date, then select the <strong>No Start Date</strong> check box. | Yes |</p>
<table>
<thead>
<tr>
<th>Link Property</th>
<th>Description</th>
<th>Required?</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Date</td>
<td>Date upon which the link grew inactive. If there is no end date, then select the No End Date check box.</td>
<td>Yes</td>
</tr>
<tr>
<td>Color</td>
<td>Color of the link. The default is selected if a border color is not chosen.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Properties Pane**

The Properties pane is displayed to the right of the social network analysis diagram. It is collapsed by default and can be expanded by double-clicking a node, a link, or a group. It can also be expanded by clicking the Expand Pane button (◅) at the top of the pane. It is collapsed by clicking the Collapse Pane button (▻) at the top of the pane.

When the pane is expanded, it is populated by the properties associated with a selected node, group, or link.

**Display 2.13 Example of a Populated Properties Pane for a Selected Node**
Here is an explanation of the regions of the **Properties** pane.

**Table 2.6**  
Properties Pane Area Description

<table>
<thead>
<tr>
<th>Area</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td><strong>Show Details</strong> button</td>
<td>Available when a node is selected, the <strong>Show Details</strong> button expands a <strong>Show Details</strong> pane at the bottom of the window. The <strong>Show Details</strong> pane is configured by the administrator and is customizable. If your deployment has been configured for use with the Comment Manager, then the Comment Manager is displayed in this region.</td>
</tr>
<tr>
<td>Area</td>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| B    | Node Annotation or Link Label | Node annotations can be viewed, edited, and added from the text area. Link labels can be viewed, edited, and added from the text area.   
**Note:** This field accepts text entries only. For example, HTML markup is not supported.  
**Note:** In the map view, new annotations cannot be added and existing annotations cannot be edited for nodes. |
| C    | Name:Value pair               | The ‘Name:Value’ properties displayed for nodes and links originating from the stored process are pulled from the database (as configured by your administrator) and cannot be modified through the SAS Social Network Analysis Server interface. For nodes and links that are added to the social network analysis diagram, there are no ‘Name:Value’ properties displayed. |
| D    | Node List                     | When a group is selected, nodes contained within the group are displayed in this area. You can select a node within the list and add or modify an annotation. You cannot add an annotation to the group. |

**Time and Scope Controller**

The time and scope controller area of the network viewer provides a time line that includes a time slider to enable you to view the evolution of the network over time (or at a specific point in time). It also contains scope controls to display either a cumulative or a marginal view, and it contains a jump-to feature to enable you to move rapidly between node change dates and link start and end dates on the time line.
Table 2.7  Time and Scope Controller Feature Description

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope controller</td>
<td>The <strong>Cumulative</strong> and <strong>Marginal</strong> options are used to control the scope of the display.</td>
</tr>
<tr>
<td></td>
<td>- <strong>Cumulative.</strong> Provides functionality to enable viewing the entry of relationships as time progresses. This allows the full graph to be displayed when the time slider is moved all the way to the right.</td>
</tr>
<tr>
<td></td>
<td>- <strong>Marginal.</strong> Provides functionality to enable viewing the beginning and end of relationships. As the time slider moves to the right on the time line, relationships appear (start time) and disappear (end time) from the graph. The graph might not be fully displayed when the time slider is all the way to the right because some relationships (shown as links) could have ended.</td>
</tr>
<tr>
<td>Note:</td>
<td>By default, the graph is displayed with <strong>Cumulative</strong> selected.</td>
</tr>
<tr>
<td>Time line</td>
<td>The time line represents a period of time, with the initial and end dates of the relationship shown as the start and end dates on the time line.</td>
</tr>
<tr>
<td>Time slider</td>
<td>The time slider can be moved to the left and right on the time line to allow visualization of the network as it develops over time.</td>
</tr>
<tr>
<td>Jump-to feature</td>
<td>The jump-to feature enables you to jump right (right arrow) or to jump left (left arrow) to move along the time line at intervals consistent with link start and end dates and with node change dates.</td>
</tr>
</tbody>
</table>

The time and scope features enable the investigator to visualize when nodes within the network became active or inactive. As the time slider moves from left to right or from right to left along the time line, nodes can change their transparency to indicate that they became active or inactive (depending on setting the view to marginal or cumulative) at the selected time. Nodes can also change color (or other visual properties) at time intervals. Changes to properties, such as color and transparency, are defined in a top-level report that is authored by the subject matter expert in the business domain. The investigator can also click anywhere along the time line, causing the slider to snap to the cursor position and show the network diagram at the time indicated at that location. The jump-to feature enables an investigator to click an arrow (left or right) to jump from one begin date of a link to the end date of a link.
The following figure shows a sample social network analysis diagram with the time slider set at May 11, 1998. Several nodes are active in the network at that time.

**Display 2.15  Time and Scope Controller Example**

**Show Details Pane**

The **Show Details** pane is displayed at the bottom of the social network analysis diagram when it is expanded by clicking the **Show Details** button of the **Properties** pane.
Display 2.16  Example of the Show Details Pane

Table 2.8  Item Description Related to Show Details Pane

<table>
<thead>
<tr>
<th>Item</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Show Details button</td>
<td>This button is available when the selected entity is a node. Clicking the <strong>Show Details</strong> button exposes the <strong>Show Details</strong> pane beneath the time and scope controller.</td>
</tr>
<tr>
<td>B</td>
<td>Resize handle</td>
<td>Drag the resize handle upward to expand the area beneath the time and scope controller, or drag the resize handle downward to expand the area above the time and scope controller.</td>
</tr>
</tbody>
</table>
| C    | Show Details pane     | The information in this area is related to the SAS Social Network Analysis entity.  

*Note:* This area can contain administrator-configured charts and graphs. For line charts, a null or empty data value is rendered via interpolation (that is, a new data point is created within the range of known data points). For all other chart and plot types, null or empty data values are interpreted as zeros and are displayed as appropriate for the chart or plot type.

The **Show Details** pane content is completely configurable, but if the Comment Manager is enabled for your deployment, it is displayed in this area of the Network Viewer. See “Adding a Comment and an Attachment to a Node” on page 60.
Network Visualization Features and Functions

Examining and Manipulating the Social Network Analysis Diagram

- Accessing and Saving a Social Network Analysis Diagram
- Review the Social Network Analysis Diagram
- Managing Network Highlighting Filter Preferences
- Specifying the Social Network Analysis Diagram Layout
- Controlling a Map View
- Controlling the Location and Zoom of the Diagram or Nodes
- Rearranging the Diagram Nodes

Exploring and Managing Nodes

- Viewing Node Details
- Viewing Node and Link Properties
- Revealing and Collapsing Hidden Nodes
- Grouping Nodes
- Viewing Grouped Node Properties
- Expanding and Regrouping Grouped Nodes
- Editing Existing Nodes and Links
- Linking Existing Nodes
- Annotating or Viewing the Annotation of a Node
- Adding New Nodes and Links
- Adding Change Dates to Nodes
- Deleting Nodes and Links
- Comments Feature Overview
Examining and Manipulating the Social Network Analysis Diagram

The social network analysis diagram is displayed based on a back-end algorithm. This means that the diagram item placement, layout, and so on, are drawn to the screen in a manner specified by a collection of analytical rules. The items (nodes) of the diagram layout and the zoom level can be controlled to allow the best view for analysis. When a diagram has been changed, depending on your system configuration and the permissions associated with your user credentials, you might be able to save the diagram.

Accessing and Saving a Social Network Analysis Diagram

When your instance of the SAS Social Network Analysis Server is deployed, the administrators configure the solution for the business needs of the installation. This includes, but is not limited to, surfacing a social network analysis diagram to enable visualization of the entity interactions. The initial diagram is created based on stored processes and is available by default when the network is accessed initially. Saved diagrams are stored in the database, leaving the original diagram generated by the stored process unchanged. By default, each subsequent time that the diagram is accessed, the diagram from the database is retrieved.

To access a specific social network analysis diagram:

1. Access the default social network analysis diagram.

2. In the network viewer, select the down arrow (▼) next to the Open (▃) icon and do one of the following:
   - To retrieve the initial diagram as configured by the administrator, select From Stored Process from the menu.
To retrieve the latest diagram saved by a user, select **Last Saved to Database** from the menu.

The specified diagram is displayed.

The social network analysis diagram can be manipulated and managed to enable visualization of the important relationships and to add or delete nodes and links as needed. To preserve your changes, you must save the diagram. When you save the diagram, it is saved to the solution database. The original diagram, generated by the stored process, is unchanged and can be retrieved as needed.

To save a social network analysis diagram:

1. Access the network viewer and perform network management tasks as needed.

2. From the main menu, select **Save** to save the diagram to the solution database.

   A confirmation message is displayed at the top of the window.

---

**Review the Social Network Analysis Diagram**

Access the social network analysis diagram related to a specific alert or entity to view the associated relationships. In some instances, previously undetected relationships are noticed and the relationships increase the level of suspicion. The following display
shows a sample social network, with the **Cumulative** button selected to view the state of the network on May 11, 1998.

**Display 3.1** Social Network Analysis Diagram Example

The icons and color that are used in a network diagram are configurable.

**Managing Network Highlighting Filter Preferences**

See “Network Highlighting Filter Preferences” on page 14 for a description of the network highlighting filter preferences.

To specify network highlighting filter preferences:

1. Expand the **Filters** pane.

2. Modify the filters to indicate the filter criteria needed.
   - **Range.** Move the sliders to reflect the range for which you want to filter.
Note: The range filter contains a minimum and a maximum slider and a control arrow at each end of the range. Each arrow controls the direction of the minimum slider. If the sliders are positioned on top of one another, then, depending on the direction of travel, both sliders might move together.

Note: The range filter displays values less than one as decimals and values greater than one as integers.

- **Date.** Select the start and end dates from the date picker calendars.
- **Checklist.** Select the items in the list that you want to be included in the displayed information.
- **Text.** Enter the text that must be associated with the node. Even if the text is not displayed (for example, for hidden or grouped nodes), the representative node is highlighted.

The interface is updated to display the results of the filters.

3 **Click Save** to save your preferences.

**Note:** To retrieve and view your filter preferences, you must click **Apply** each time you navigate away from and then return to this page.

**Specifying the Social Network Analysis Diagram Layout**

In the base installation, the social network analysis diagram layout has two possible modes, Tree and Springy. The Springy layout is a force-directed layout presented with an option of three levels of incremental optimization (400, 4,000, and 40,000) of the network. Depending on the size of your social network analysis diagram, the purpose for the current review, and the length of time the diagram takes to load, you might want to change the layout for your current session. Here are the layouts available.
<table>
<thead>
<tr>
<th>Layout</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Layout</td>
<td>Displays the hierarchical relationship of the nodes against the time line of activity.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If your data cannot be organized into a hierarchy, then a message to that effect is presented, and the diagram is not updated.</td>
</tr>
<tr>
<td>Springy (400)</td>
<td>This is the default layout option for the social network analysis diagram. It executes 400 iterations to produce the diagram.</td>
</tr>
<tr>
<td>Springy (4000)</td>
<td>This layout option executes 4,000 iterations to produce the diagram.</td>
</tr>
<tr>
<td>Springy (40000)</td>
<td>This layout option executes 40,000 iterations to produce the diagram.</td>
</tr>
</tbody>
</table>

Here are examples of the same data displayed using each of the layout options. As the examples illustrate, the increased iterations of the Springy layout force the diagram nodes to spread out more. In this context, iteration is defined as an incremental optimization of the graph layout such that link overlaps are minimized. Viewing the same data with different layouts might cause some relationships to become more or less obvious, depending on the layout selection. Again, this is because the goal of additional iterations (400, 4,000, 40,000) is to optimize the layout through node placement so as to minimize link overlapping.

**Note:** If your diagram does not have a significant number of nodes, the difference between the Springy layout modes might be imperceptible.
Display 3.2  Example of Tree Layout
Display 3.3  Example of Springy (400) Layout
Display 3.4  Example of Springy (4000) Layout
If you change a layout, the change applies to the current session, and the diagram will return to the default layout when you exit from the session.
To change the layout of the current social network analysis diagram, select the down arrow (▼) near the Run Layout (►) button on the toolbar, and select the option from the drop-down menu.

If the layout that you select is supported by the data, then the social network analysis diagram updates to display the new layout.

**Controlling a Map View**

Depending on how your deployment is configured, you might be able to superimpose the social network analysis diagram onto a preconfigured map view to enable geographic reference while reviewing and managing the interactions.

The following rules apply to the map view:

- Nodes must have a longitude and a latitude value in order to be displayed in the map view.
  
  In the map view, because nodes are pinned to their longitudinal and latitudinal positions, they cannot be moved.

- You can view a list of nodes without a longitude and a latitude value by selecting the **See Nodes** link at the base of the map view.

- In the map view, groups are not displayed. Instead, the individual nodes, if they have longitude and latitude values, are shown. Within groups, you can view nodes that do not have longitude and latitude values by selecting the **See Nodes** link at the base of the map view.

- In the map view, entity properties (see “Viewing Node and Link Properties” on page 47), node details (see “Viewing Node Details” on page 45), the search feature for visible nodes, and time line functionality are all valid functions.
The following display shows an example map view along with the See Nodes window listing the nodes not displayed in the view.

**Display 3.6 Map View Showing See Nodes Window**

To view the social network analysis diagram with a map in the background:

- Select the **Show Map** (show) icon from the toolbar.

  **Note:** This icon is enabled only if the Map feature can be invoked.

The diagram is superimposed on a map. The toolbar buttons, with the exception of the **Hide Map** (hide) button, are dimmed and inaccessible.

**TIP** Use the mouse wheel and keyboard arrow keys to zoom in and out and to move the map view. Here are the available controls:

- To zoom in using the mouse, rotate the mouse wheel away from you.
- To zoom out using the mouse, rotate the mouse wheel toward you.
To move the map around (left, right, up, down) using the mouse and keyboard, press the Shift key and then click an area of the map view and drag in the desired direction (left, right, up, down).

To zoom in using the keyboard, press the + key on the numeric keypad.

To zoom out using the keyboard, press the – key on the numeric keypad.

To move the map to the left (pan right) using the keyboard, use the right arrow keyboard key.

To move the map to the right (pan left) using the keyboard, use the left arrow keyboard key.

To move the map down (pan up) using the keyboard, use the up arrow keyboard key.

To move the map up (pan down) using the keyboard, use the down arrow keyboard key.

To restore the diagram to the default, non-map, display:

- Select the Hide Map (_hide_map_ button from the toolbar.

The diagram is redrawn without the map displayed in the background.

**Controlling the Location and Zoom of the Diagram or Nodes**

Although the nodes of a social network analysis diagram can be managed individually, several features allow the entire diagram to be moved. During the course of working with the diagram, the diagram might become off-center or might not be displayed in a way that shows the important features in a focal-point area. Several buttons, if configured, enable you to have the diagram redrawn to reposition the items. Available features enable you to perform the following tasks:

- center the diagram

- move the diagram left, right, up, or down
The toolbar buttons for controlling the location and zoom feature of the social network analysis diagram are listed in the following table.

<table>
<thead>
<tr>
<th>Task</th>
<th>Toolbar Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center the diagram</td>
<td></td>
<td>Use this control to center the diagram in the display. Click the down arrow (▼) next to the <strong>Home</strong> button to reveal the buttons for moving the diagram.</td>
</tr>
<tr>
<td>Move the diagram</td>
<td></td>
<td>Revealed by clicking the down arrow (▼) next to the <strong>Home</strong> button, these arrows move the diagram in the indicated directions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> You can also move the entire diagram by holding down the Shift key while dragging the diagram with the mouse pointer. This is generally helpful for relocating the diagram quickly to enable viewing of nodes and relationships that might have been positioned outside of the immediate viewing area.</td>
</tr>
<tr>
<td>Zoom in on the diagram</td>
<td></td>
<td>Zoom in on the diagram. The zoom is executed for each press of the button until maximum size is reached.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> You can also place your mouse pointer over an entity or area and roll the mouse wheel away from you to zoom in on the entity or area.</td>
</tr>
<tr>
<td>Zoom out on the diagram</td>
<td></td>
<td>Zoom out on the diagram. The zoom is executed for each press of the button until minimum size is reached.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> You can also place your mouse pointer over an entity or area and roll the mouse wheel toward you to zoom out on the entity or area.</td>
</tr>
</tbody>
</table>

**Rearranging the Diagram Nodes**

Diagram nodes can be moved to allow the best possible experience for viewing and analyzing the displayed information.

To move a node, drag the node to the new location.
Note: The node that is being dragged will rest on top of any nodes that it is dropped onto. So dragging node A to node B, for example, will place node A on top of node B. Dragging node B to node A will place node B on top of node A. The layered placement of nodes when dragging and dropping is not time dependent. This means that regardless of the order of the appearance of the node on the time line, the order of the layers is based on where they are dragged, and not on which node appeared before the other.

To move more than one node at a time, either use the mouse to lasso the nodes, or select multiple nodes by holding down the Ctrl key and clicking to select the nodes. Then drag the collection of nodes to the new location.

Exploring and Managing Nodes

Viewing Node Details

Depending on how your administrative team has configured your deployment, you might have details associated with specific nodes in your network view. A table of node details might appear on a tab beneath the time slider control.

To view the Show Details pane with details related to an indicated node:

- Double-click a node. The Properties pane is expanded. Click the Show Details button in the Properties pane. The Show Details pane is expanded at the bottom of the window, as configured by your administrator.

After the Show Details pane is expanded, clicking a new node repopulates the pane with information pertaining to the newly selected node. Group details are not available, and clicking a group or selecting more than one node hides the Show Details pane.
Here is a sample window showing an expanded **Show Details** pane with details related to the selected Node A.

**Display 3.7**  Example Window Showing Expanded Show Details Pane

The **Show Details** pane is fully customizable.

If there is tabular data displayed in the **Show Details** pane, the tabular data is searchable. As shown in **Display 3.8**, when you search for the letter A at the Network
Viewer window, nodes meeting the criteria are highlighted, and row data in the table is excluded from the list if the row does not contain the search term.

**Display 3.8  Example Window Showing Search Criteria Highlighting and Exclusion**

---

**Viewing Node and Link Properties**

All nodes and links of a network diagram include properties to identify or specify the physical parameters of the nodes and links.

To view the properties associated with a node or a link:

1. Select a node or a link from the social network analysis diagram.

   **TIP** Because the narrow width of links in most non-zoomed views makes them difficult to select, you might have to zoom in on the link to select it.
Note: In order for node or link properties to be displayed in the Properties pane, the node or link must be selected by clicking it. The Properties pane does not display the properties of a node that has been selected by lassoing with the mouse.

2. Expand the Properties pane to view the associated properties.

**TIP** If you double-click a node or a link, the Properties pane expands automatically.

**Display 3.9  Example of Node Properties Displayed**

Revealing and Collapsing Hidden Nodes

When a node is hidden, the attached node displays a plus sign (⁺) at the bottom of the node to indicate that there is information that is not displayed. Clicking the plus sign reveals nodes to show their place in the social network analysis diagram.
To reveal hidden nodes:

1. Locate a non-group node displaying a plus sign at the bottom.
2. Click the plus sign at the bottom of the node.
   Hidden nodes and associated links appear in the social network analysis diagram.
   **Note:** You must save the diagram to save the changes that you made to the node or link.
3. To save your updates, click **Save (✓)**.
   A confirmation message is displayed at the top of the window.

To collapse (or re-hide) the revealed nodes:

- Select the **Collapse Expanded Nodes** button (✓) from the social network analysis diagram toolbar.
  The nodes that were expanded last are collapsed to conceal the originally hidden nodes.

**Grouping Nodes**

To group nodes, perform the following steps:

1. Click a node that will be included in the group.
   A border is displayed around the item to indicate that it is successfully selected.
2. Hold down the Ctrl key and click each of the remaining nodes that will be included in the group.
   Each selected node is displayed with a border surrounding it to indicate that it is selected.
**TIP** To select nodes, you can also use the mouse to lasso the nodes. When you release the mouse button, those nodes encircled will have a black border to indicate that they are selected. You can use this method in conjunction with holding down the Ctrl key and clicking to add more nodes to the selection.

**Note:** Groups cannot be nested. Therefore, only nodes can be added to a group. Selecting a group and attempting to include it in another group results in a warning message being displayed.

3 Select the **Group Nodes** button (□) to group the nodes into a single icon.

**Display 3.10** Example Showing a Black Border on Selected Nodes

---

**Viewing Grouped Node Properties**

Here is an example of a node that represents a group. There is no limit to the number of groups that might be displayed in the social network analysis diagram.
A grouped node can contain two or more nodes. By reviewing the properties of a group, you can see a list of all nodes in the group, and you can view and modify annotations associated with a node without expanding the group. Nodes that were added to the network as part of the network generation process (as opposed to manual addition) also show name-value pair information, as appropriate.

To view grouped node properties, at the SAS Social Network Analysis tab:

1. Expand the Properties pane.
2. Click a group.
   The Properties pane displays a list of nodes included in the selected group.
3. Select a node to view its properties.

**TIP** Annotations related to the selected node can be added or modified through the Annotation text box. Clicking Apply saves the annotation with the node.
Expanding and Regrouping Grouped Nodes

Nodes representing groups are displayed as shown in Display 3.11 on page 51, including the plus sign (+) at the bottom of the icon to indicate that there is information that is not displayed. Clicking the plus sign expands the group to show the contained nodes.

To expand the group:

- Click the plus sign at the base of a Group icon.

  The nodes in the group are displayed, and the graph might be redrawn to better display the diagram.

To regroup nodes easily:

- Select the Regroup Nodes button ((REGROUP NODES)) from the social network analysis diagram toolbar.

  The nodes that were ungrouped last are regrouped.

The following rules apply to regrouping nodes:

- When multiple groups have been expanded, selecting the Regroup Nodes button collapses the groups in the reverse order of the original expansion process. So, for example, if groups one, two, and three are expanded (in that order), then the regrouping occurs in the order of group three, group two, and then group one.

- If a node in the group is included in a new group before you attempt to regroup the original group, then the Regroup Nodes button is inaccessible and this procedure cannot be completed.

- If a node in an expanded group is deleted before you attempt to regroup, then the Regroup Nodes button is inaccessible and this procedure cannot be completed.
Editing Existing Nodes and Links

Most of the parameters associated with nodes and links can be updated. The edited information replaces the previous information.

To edit a node or a link:

1. Select the node or the link from the social network analysis diagram.

   **TIP** Because the narrow width of links in most non-zoomed views makes them difficult to select, you might have to zoom in on the link to select it.

   **Note:** In order for node or link properties to be displayed in the Properties pane, the node or link must be selected by clicking it. The Properties pane does not display the properties of a node that has been selected by lassoing with the mouse.

2. Choose **Edit Entity** (>Edit Entity) from the toolbar.

   The node- or link-specific Graph Entities Wizard is displayed.

3. Make the required updates and click **OK** to return to the diagram.

   **Note:** You must save the diagram to save the changes that you made to the node or link.

4. To save your updates, click **Save** (Save). A confirmation message is displayed at the top of the window.

Linking Existing Nodes

When reviewing a social network analysis diagram, you might notice a potential connection that is not automatically linked by the solution. You can add links manually to draw a connection between nodes.

To add a link between existing nodes:
1 Select the nodes to which a link will be added and click the **Add Link** button (מבחר רשתות עצבים) from the social network analysis diagram toolbar.

The Graph Entities Wizard appears.

For additional information about the link properties in the Graph Entities Wizard, see Table 2.5 on page 24.

2 Specify the parameters for the link that joins the nodes.

3 After all the parameters have been specified, click **OK** to continue.

The new link appears in the diagram connecting the indicated nodes.

**Note:** You must save the diagram to save the changes that you made to the node or link.

4 To save your updates, click **Save** (حفظ).

A confirmation message is displayed at the top of the window.

---

**Annotating or Viewing the Annotation of a Node**

For nodes that are drawn by the system as well as for nodes that you add to the diagram, annotations can be added to provide additional information about a node. The node annotations are displayed in the **Properties** pane when the node is selected.

To annotate an existing node or to view its annotation:

1 Identify the node that you want to annotate or whose annotation you want to view.

2 Do one of the following:
   - Double-click the node to reveal the **Properties** pane.
     
     The **Properties** pane contains an unlabeled **Annotation** text box.
   - Click the node and then click **Edit Entity** (עריכה) from the toolbar.
     
     The Graph Entities Wizard is displayed, showing the **Annotation** text box.
The **Annotation** text box enables you to add an annotation or to view or edit an existing annotation.

**Note:** The **Annotation** box accepts text-only entries. For example, you cannot include HTML markup with the annotation.

**Note:** In order for node or link properties to be displayed in the **Properties** pane, the node or link must be selected by clicking it. The **Properties** pane does not display the properties of a selected node that has been selected by lassoing with the mouse.

3 Enter text for the annotation or modify existing annotation text.

4 Do one of the following:
   - If you added or edited the annotation at the **Properties** pane, click **Apply** to save your changes.
   - If you added or edited the annotation at the Graph Entities Wizard, click **OK** to save your changes.

**Note:** You must save the social network analysis diagram to save the changes that you made to the node or link.

5 To save your updates, click **Save ( ✓)**.
   A confirmation message is displayed at the top of the window.

**Adding New Nodes and Links**

You can add nodes to the social network analysis diagram by invoking the Graph Entities Wizard from the toolbar **Add Node** button. When adding a node to a social network analysis diagram, you specify the features of the node as well as the features of the link connecting the node to the diagram. This feature also enables you to add an annotation during new node creation or after the node is added to the diagram.

To add new nodes and links to a diagram:

1 Select a node to which you want to link the new node.
2 From the main menu, select **Add Node**.

The Graph Entities Wizard is displayed, enabling you to specify the node properties as well as the link properties. From the **Add Node** tab of the Graph Entities Wizard, you can also indicate that a specific node is to change one or more properties on a specific date within the link period. (See “Adding Change Dates to Nodes” on page 56 for additional information.)

3 Specify the parameters for the node and for the link that joins the nodes.

4 After all the parameters have been specified, click **OK** to continue.

The new node and associated link are dropped onto the diagram and are linked to the originally selected node.

5 At the diagram, drag the new node to your location of choice.

   **TIP** If additional links are needed between the new node and existing nodes, use the **Add Link** button to add additional links to other nodes. See “Linking Existing Nodes” on page 53.

   **Note:** You must save the diagram to save the changes that you made to the node or link.

6 To save your updates, click **Save**.

   A confirmation message is displayed at the top of the window.

The types of nodes and specifications for the links are configurable. Therefore, the options available to you for a specific analytic domain might not be the same options available to you if you have access to a different analytic domain.

**Adding Change Dates to Nodes**

During node creation (see “Adding New Nodes and Links” on page 55), or when you edit an existing node afterward (see “Editing Existing Nodes and Links” on page 53), you can indicate specific dates at which a change occurred. Change dates can also be accompanied by the inclusion of an icon symbol and node attributes that differ from the original.
To indicate a change date for a node:

1. At the Graph Entities Wizard, locate the **Change Dates** area.

   ![Graph Entities Wizard Showing the Change Dates Area](image)

2. Ensure that the initial state of the node (color, border color, and icon) is correct.

3. At the **Change Dates** area, click **Add Row** (+) to insert a new row beneath the default row.

4. At the new row, indicate the change date as well as the symbol background color (**Color**), border color, and icon of the node for the specific date.

   ![Example of Change Dates Row Added](image)
If additional change dates are required, repeat the preceding two steps to add and customize the nodes for a specific date.

Click **OK** to save your changes and return to the network diagram.

In the social network analysis diagram, as the time slider reaches the specified change dates, the node changes to represent the attributes indicated on those change dates. This is true in the standard network view as well as in the map view (if it is enabled for your deployment).

### Deleting Nodes and Links

Occasionally you might want to remove a node from view or a link from specific nodes. Depending on your rights and the solution configuration, you might be able to remove a node or a link (delete it from the diagram). If you delete a node or a link, it cannot be recovered.

**Note:** A node or a link cannot be deleted if that action would leave a node unlinked from other nodes in the network. In these instances, the deletion is prevented and a message is displayed.

To delete a node or a link:

1. Locate the node or link that you want to delete and select it on the social network analysis diagram.

2. With the node or link selected, choose **Delete Entity (Delete)** from the toolbar.
   
   The node or link is removed from the diagram.

   **Note:** You must save the diagram to save the changes that you made to the node or link.

3. To save your updates, click **Save (Save)**.
   
   A confirmation message is displayed at the top of the window.
Comments Feature Overview

Depending on your configuration, you might have the Comment Manager enabled for your deployment. The comments feature provides a way for investigators to add comments and attachments to social network nodes. If this feature is enabled for your deployment, it is available from the Show Details pane of the network viewer.

Here are considerations for use of the Comment Manager:

- Each comment or group of comments must be entered under a topic.
- Topics can be associated with more than one comment.
- Text in the Topic field is limited to 255 characters.
  
  **Note:** Leading and trailing white space is removed automatically and does not affect the character count.

- The topic with the most recent activity is displayed in an expanded pane. The remaining topics are collapsed by default.

- Topics are organized from most recent activity (displayed at the top) to least recent activity.
  
  □ Recent activity is defined by most recent comment post date. If a comment is made on an older thread, that thread will be placed at the top of the Comment Manager the next time the page is loaded.

- Comments are organized within topics. The initial comment in a topic is anchored to the bottom of the thread, and each subsequent comment stacks on top of the preceding comment. The most recent comment in a topic is the uppermost comment.

- Multiple attachments associated with a comment cannot be removed individually. All attachments must be removed at the same time when the files are staged for upload.
Adding a Comment and an Attachment to a Node

When the commenting feature is enabled, requesting the node details from the social network analysis diagram provides an opportunity to comment on the node.

Display 3.15  Screen Showing Node Details Area Beneath the Time Slider

When a comment is added to a node, it can be either a comment associated with a new topic or a comment attached to an existing topic.

1  Select a node from the social network analysis diagram and select Show Details from the Properties pane.

   The Show Details pane is displayed beneath the social network analysis diagram.

2  Do one of the following:

   a  If you are creating a new topic under which to add a comment, enter text into the Enter a topic text box anchored to the bottom of the Comment Manager. A new text area to enable entering a comment is displayed.

   b  If you are entering a comment under an existing topic, locate the topic and expand the topic pane.
3 At the topic of interest, enter a comment in the text area. The **Post** and **Cancel** buttons are enabled.

For topics, the topic and the topic body must contain text other than white-space characters to cause the buttons to become enabled.

For comments, the comment body must contain text other than white-space characters to cause the buttons to become enabled.

4 (Optional) Add one or more attachments by clicking the **Attach File** button and selecting the files from the Select File(s) to Upload window that is displayed. Click **Open** to stage the file for upload.

**Note:** You can add multiple attachments if you are using any supported web browser except Microsoft Internet Explorer. To add multiple attachments, press Ctrl and select each file to be included (Microsoft Windows) or press Shift and then select the first and last file in a sequence of files to select them all. If necessary, consult your operating system documentation to learn about multiple-select operations specific to your environment.

**Note:** After files are staged for upload, no additional files can be included. While the files are staged for upload, they can be removed by clicking the **Remove All** button. All added files are removed.

The files are not uploaded until the comment is posted.

5 Click **Post** to add the comment to the subject and to upload any attached files.

**Note:** A comment must be added if files are attached. Adding a comment enables the **Post** and **Cancel** buttons and provides a means by which to upload the attachment or to cancel the operation.

For topics, the topic and the topic body must contain text other than white-space characters to cause the buttons to become enabled.

For comments, the comment body must contain text other than white-space characters to cause the buttons to become enabled.

You can add more than one comment to a node. All comments are listed separately and can be viewed individually.
Topics, comments, and attachments cannot be edited or deleted once they have been posted.

During use of the Comment Manager, you can click **Cancel** to reset the form. All of the text in all of the fields is removed, and all staged files are removed from staging. The **Post** and **Cancel** buttons are disabled.

After comments and topics are posted, only the first 200 characters of comments and topics are displayed. A **show more** button is visible. Clicking this button causes all text to be displayed. When all of the text is displayed, a **show less** button replaces the **show more** button. Clicking the **show less** button hides all text beyond the first 200 characters.

### Printing

The print feature of the SAS Social Network Analysis Server enables you to obtain a hard copy of the information in the current view of the solution window. When you initiate printing for the network viewer, the social network analysis diagram is displayed in a new browser tab, the Print View, and the native browser Print window is opened.

**Note:** The social network analysis diagram displayed in the Print View browser tab is shown as it is viewed in the interface and cannot be modified in the Print View window.

Here is an example of a Print View browser tab launched from the network viewer.
To print from the network viewer:

1. Navigate to the social network analysis diagram that you want to print.

2. Organize the social network analysis diagram in a manner that is consistent with what you want to see in the hard copy.

3. Click **Print** (打印) from the main toolbar.
   
   A Print View browser tab is opened for the social network analysis diagram.

4. The native browser Print window is displayed by default. If it has been closed, then select **Print** from the **File** menu of the browser window to display the native browser Print window.

5. At the native browser Print window, click **OK** to continue.

The configured view is sent to the selected printer.
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