NWAM Phase 1 UI Spec v1.14

23 Nov 2009

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Panel Icon

The *Location* panel icon is shown in the panel's status notification area at all times, and is the primary means by which you will interact with NWAM. It is the focus for information messages about changes to your network status, and its menu allows quick access to essential network functionality.

The icon's appearance indicates your current level of network connectivity (via the emblem overlaid on the icon):

	**Full**: All manually-enabled connections in the active network profile are online, and the required number of connections in the active profile group (if such a group exists) are online. The "required number" means: one connection for groups of priority type *Exclusive;* one or more connections for groups of priority type *Shared*; and all of the connections in the group for groups of priority type *All*.
	**Partial**: The NWAM service is running normally, but one or more manually-enabled or priority group connections are offline such that the status is not 'Full Connectivity', as defined above. This status emblem is also shown if a wireless connection is pending user input, such as the choice of an available wireless network to connect to, or the input of a WEP/WPA key.
	**Offline**: The NWAM service is disabled or in maintenance mode.

If one or more wireless interfaces are online, the main part of the icon shows the current wireless signal strength instead of the generic network icon. If multiple wireless interfaces are online, the average signal strength is indicated. The emblem is still used to represent your overall network connectivity, for example:

	**Full**: All manually-enabled connections in the active network profile, and the required number of connections in the active profile group are online. At least one of those connections is wireless, and its signal strength (or their average signal strength) is fair.
	**Partial**: One or more manually-enabled or priority group connections are offline or pending user input, but at least one wireless connection is online, and its signal strength (or their average signal strength) is good.
	**Offline**: All connections in the active network profile are wireless, but the NWAM service is disabled or in maintenance mode.

TBD: especially for the wireless case, might be better to show no emblem rather than the 'green' one?

Clicking the panel icon opens the Network Preferences dialog (p??).

When you hover the mouse over the icon, the tooltip shows the name of the currently active location and network connection profile, the status of any active VPN applications, the status of any manually-enabled connections, and the status of connections in the active priority group (if there is one):

Location: Automatic
Network Profile: Automatic
VPN: None active
Wired (eth0): Cable unplugged
Wired (eth1): Connected
Wireless (ath0): Connected to Rover (86%)

VPN item lists any currently-running VPN application, e.g. "CiscoVPN active" if a single application is active, "*n* active" if two or more applications are running, or "None active".

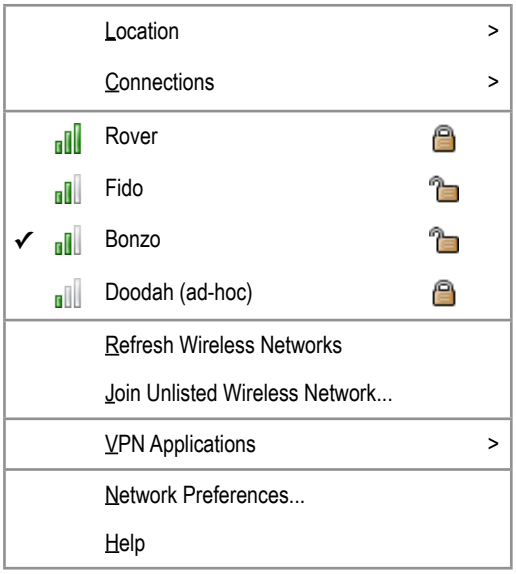
Connection Names

Connection names are shown in the GUI in the format *InterfaceType (LinkName)*, where:

- *InterfaceType* is "Wired N" for wired NICs (where N is not shown for the first wired NIC, and N>=1 for susbequent NICs), or "Wireless N" for wireless NICs (again, N is either not shown or >=1).
- *LinkName* is the link's vanity name (e.g. 'net0'), or default device name if no vanity name is defined.

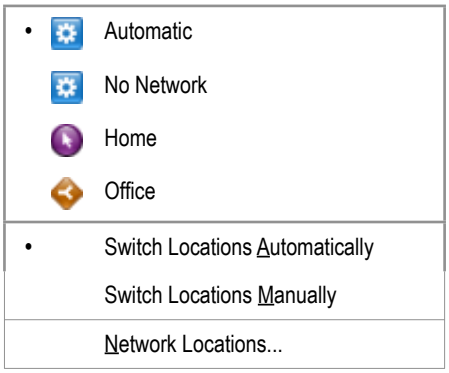
Panel Icon Context Menu

This menu is posted by right-clicking the panel icon:



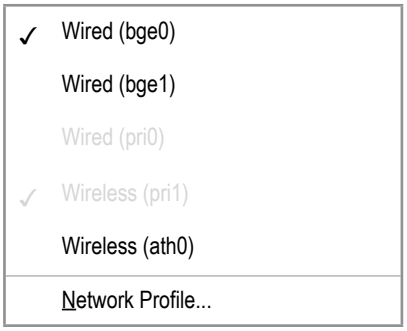
The function of the menu items is as follows:

- *Location* reveals a submenu:



  - First section lists each available location, with an icon representing its activation type: system, manual or conditional. The current location is represented by a radio button indicator (•). If the *Switch locations manually* menu item is selected, then choosing a location other than the current location attempts to activate that location.
  - *Switch locations automatically (radio button, selected by default)*: When this mode is selected, you have no direct control over location changes, so all the locations in the submenu are grayed-out. The most appropriate System or Conditional location will be activated at any time, in response to network environment changes.
  - *Switch locations manually (radio button)*: In this mode, you have full control over location changes, so each location in the submenu can be activated by selecting it, regardless of its activation type. Any location you activate in this way will remain active until you activate a different location, or select *Switch locations automatically*.
  - *Network Locations* opens the Network Locations dialog (p??).

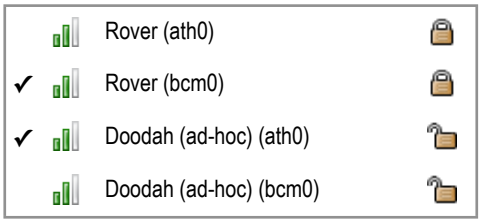
- *Connections* reveals a submenu:



  - First section lists each connection in the current network profile, in the same order they are listed in the Network Profile view (p??). Enabled connections are shown with a check mark. Selecting an enabled connection attempts to disable it, and vice versa. Connections of activation type Prioritized (pri0 and pri1 in example) are greyed-out, since they cannot be manually enabled or disabled.
  - *Network Profile* opens the Network Preferences dialog (p??), with the Network Profile view (p??) selected.

- The next section of the menu is a combined list of available favorite wireless networks, and any other currently available networks that are broadcasting their ESSID. The list is ordered by current signal strength, strongest first. Signal strength indicator is shown first, then ESSID followed by "(ad-hoc)" for ad-hoc networks, then secure/open indicator (right-aligned).

  If you have *N>1* active wireless interfaces, each wireless network is shown N times, with the link name appended in parentheses, and each connection marked with a check mark. For example:



  Any network to which you are currently connected is indicated with a check mark indicator (✓) to the left of the signal strength indicator.

  If no networks are available to be listed in this section, a single disabled menu item is shown: "No wireless networks detected".

  If no wireless connections are currently enabled, a single disabled menu item is shown, "No wireless connections enabled". If no wireless NICs are installed, this section of the menu is hidden altogether.

  Selecting the ESSID of a network to which you are not currently connected attempts to connect to that network. If connection fails, you are re-connected to your previous wireless network, if any. This manual switching of networks does not affect any stored network configuration, and lasts until the next manual or automatic switch of locations occurs.

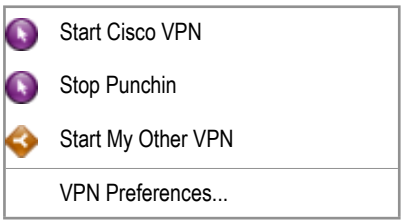
  Selecting the ESSID of a network to which you are already connected has no effect.

- *Refresh Wireless Networks* causes the list of available wireless networks and their signal strengths to be re-scanned and updated in the menu. This menu item is disabled if no wireless connections are currently enabled, and hidden if no wireless NICs are installed.

- *Join Unlisted Wireless Network*... opens the Join Wireless Network dialog (p??) with no details pre-filled, to allow you to connect to a network that is not broadcasting its ESSID. Once connected to any such network, it appears on this context menu in the list of favorite and available networks. If the network was not added to the list of favorites when connecting, it will disappear from this list again after the next disconnection.

  This menu item is disabled if no wireless connections are currently enabled, and hidden if no wireless NICs are installed.

- *VPN Applications* submenu has one menu entry for each VPN application defined in the VPN Preferences dialog (p??) if any, in the same order as they are defined there, followed by a *VPN Preferences* menu item. E.g:



  - Each entry in the first section contains an icon indicating the VPN application's activation type: manual or conditional, followed by *Start <name>* for VPN apps that are not running, and *Stop <name>* for those that are currently running. The entries for conditional VPN applications are greyed-out since you cannot manually start/stop a conditional ENM. *TBD: or should it be possible to select conditional ENMs? Would this attempt to change their type to manual and activate them? See email from mph.*
  - The *VPN Preferences* menu item opens the VPN Preferences dialog (p??).

- *Network Preferences* opens the Network Preferences dialog (p??).
- *Help* opens the help browser at a page appropriate to this context menu.Animation and Icons

Animation

Animation is Low Priority for Phase 1, may be dropped.

The panel icon should animate (simply, perhaps 2 or 4 frames/sec) when a status change is pending but not complete, in particular when:

- a scan for available wireless networks is in progress
- an attempted connection to a wired or wireless network is in progress but not yet established

This animation should be controlled by the `/desktop/gnome/interface/enable_animations` gconf key so that system administrators can disable it if desired.

Notification messages

A notification message appears when a significant change of network status occurs. All messages are shown for the system default length of time before disappearing again. The following events should trigger a notification message:

Event	Message format	Example
A wired connection is established.	**InterfaceType (LinkName) connected** Address: IPv4 and/or IPv6 address Speed: Connection speed *	**Wired (eth0) connected** Address: 192.168.1.1 Speed: 100Mb/s
A wireless connection is established.	**InterfaceType (LinkName) connected to ESSID** Address: IPv4 and/or IPv6 address Signal strength: 0-100% Speed: Connection speed *	**Wireless (ath1) connected to Rover** Address: FEBC:A574:382B:23C1:AA49:4592:4EFE:9982 Signal strength: 87% Speed: 11 Mb/s
A wired connection is dropped.	**InterfaceType (LinkName) disconnected** Reason *	**Wired (eth0) disconnected** Cable unplugged
A wireless connection is dropped.	**InterfaceType (LinkName) disconnected from ESSID** Click this message to view other available networks**	**Wired (ath1) disconnected from Rover** Click this message to view other available networks
A wireless connection attempt failed.	**Unable to connect to ESSID1** Trying ESSID2 instead***	**Unable to connect to MyOffice** Trying MyHome instead
The location has changed.	Reason *	**Switched to location 'Home'**
No wireless networks were found.	**No wireless networks found** Click this message to join an unlisted network****	**No wireless networks found** Click this message to join an unlisted network

* Clicking the message opens the Connection Properties view (p??) for the interface in question

* * Clicking the message opens the Wireless Network Chooser dialog (p??)

* * * Only shown if the user has manually attempted to connect to ESSID1, e.g. via the panel icon menu

* * * *Clicking the message opens an empty Join Wireless Network dialog (p??)

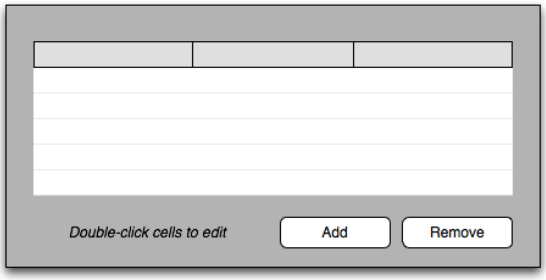
Editable Tables

The remainder of this document describes the *Network Preferences* and *Locations* dialogs, both of which include, in various places, tables whose contents can be edited by the user.

The general specification for editable tables is described here, and will be referenced as required from elsewhere in the document.

Initial State

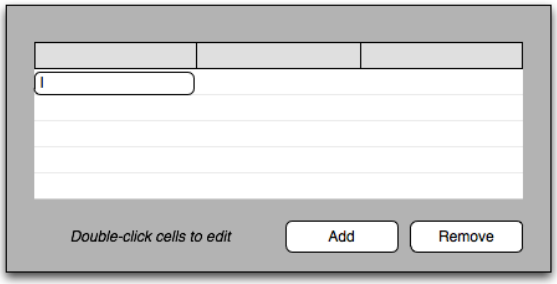
Editable tables have adjacent **Add** and **Remove** buttons, and inline help text that reads "Double click table cells to edit". An empty table will therefore look something like this:

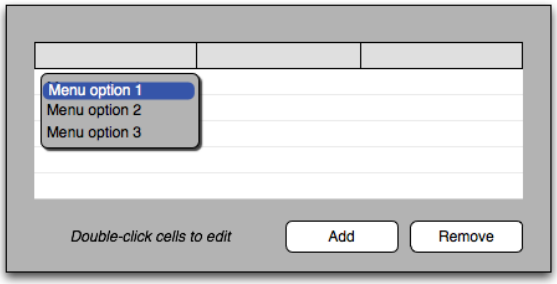


Entering a new row

User initiates entry of a new row by clicking the **Add** button, or by double-clicking any cell on any empty row. The **Add** button is enabled at all times, except while a row is already being added.

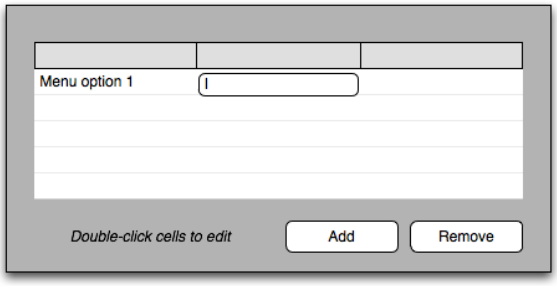
When a row is added, an input control is shown overlaying the first cell in the first empty row, and given keyboard focus. This control will usually be a text field, but it may also be a combo box or a popup menu:





At this point, the user has three choices:

1. **Complete the entry for this cell**: enter text and press *Return* or *Tab* (for a text field), or select a menu item using up/down arrows and press *Return* (for a menu choice), or click the desired menu choice with the mouse. The overlaid control is replaced by the text that was entered/chosen, and focus moves to the next cell in the row:

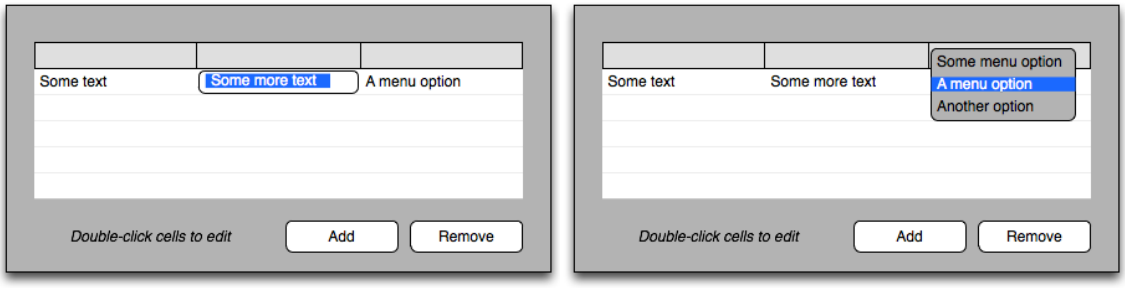
   When the last cell in a row is entered, focus moves to the first cell of the next row, allowing entry of another row, unless otherwise specified for a particular table.

2. **Move to another cell**: press *Tab* to move focus to the next cell in the row, or *Shift+Tab* to move focus to the previous cell in the row. If the user enters any text before pressing *Tab*, the text is retained. Focus wraps between rows, but not between the first cell and the last cell in the table.

3. **Cancel entry for the entire row**: press *Esc*. All cells in the row are cleared, and keyboard focus returns to the **Add** button in the dialog.

Editing a cell

Double-clicking a non-empty cell causes its input field to be displayed and focused, with the current cell contents pre-selected:

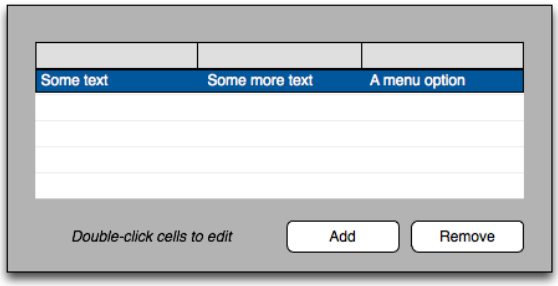


From here, behaviour proceeds as though the user were part way through entering a new row, except that pressing *Esc* does not clear the row. Instead, *Esc* cancels any pending changes to that cell, and returns focus to the *Add* button.

Removing a row

A row can be removed in two ways.

1. Select the row, then click the **Remove** button. A row is selected by clicking any cell in the row, causing the entire row to be highlighted. Multiple row selection is allowed in the usual way (using *Ctrl* and/or *Shift*) unless otherwise specified for a particular table. Empty rows cannot be selected.

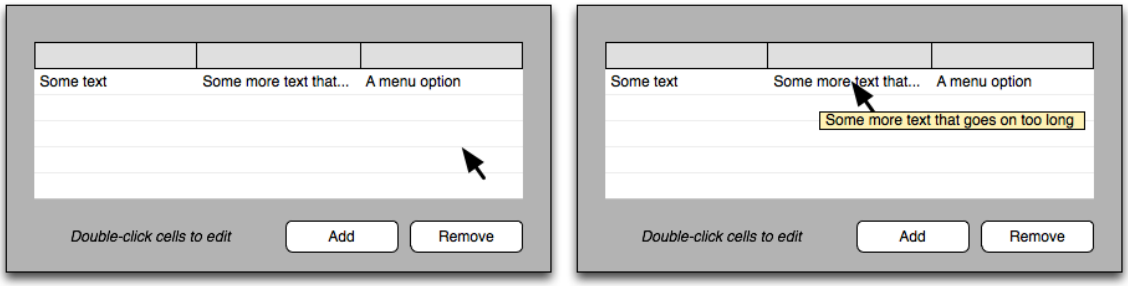


2. Click the **Remove** button while any cell is being edited. That cell's entire row will be removed.

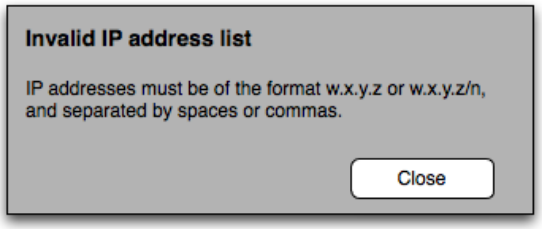
The **Remove** button is disabled at all other times.

Other behaviour

Table cells whose contents are not fully visible are ellipsised, and given a tooltip that shows the entire cell contents.



Input validation is performed whenever focus leaves a cell that is being edited, either explicitly (e.g. by pressing *Enter*) or implicitly (e.g. by clicking the dialog's **OK** button whilst editing a cell). If validation fails, an alert is shown that indicates the problem and the input required. Closing the alert returns focus to the invalid cell in the table.



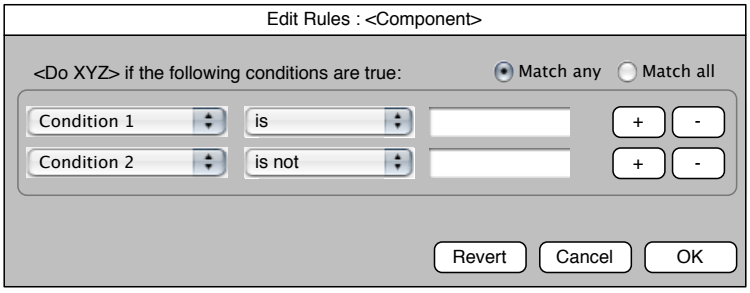
Rules Dialog

The Rules Dialog is accessed from the Network Locations dialog and the VPN Preferences dialog.

The specific rules available differ for each of those purposes, and are listed in the appropriate section. This section describes the general behaviour of the Rules Dialog, regardless of the specific rules provided.

Components

The dialog has three components: the condition text, the rule combination radio buttons, and the condition table.



By default, the condition text is “If the following conditions are true:”. This text can be changed for any given instantiation of the dialog, typically to “Do <something> if the following conditions are true:”.

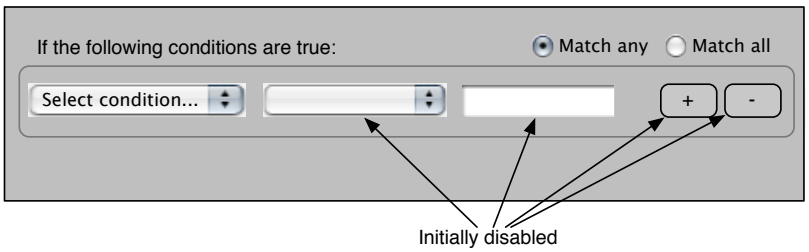
The rule combination radio buttons are a group of two radio buttons labelled **Match any** and **Match all**. The radio buttons may be hidden for any given instantiation of the dialog.

The conditions themselves comprise a dynamic table (explained below).

Initial State

The title of the Rules Dialog is “Edit Rules : <Purpose>”. For example, “Edit Rules : Home” for a conditional location, or “Edit Rules : Punchin” for a conditional VPN application.

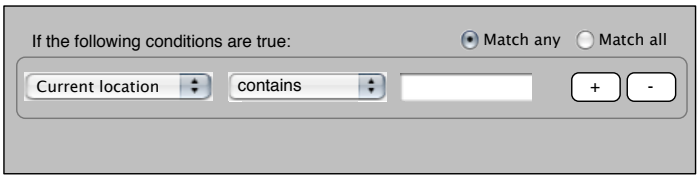
The initial state of the conditions table is as follows:



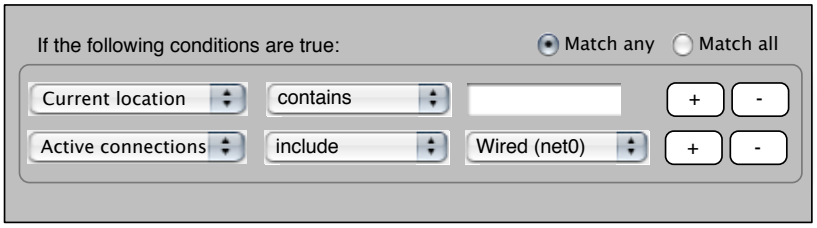
Specifically:

- **Match any** radio button is selected by default, if the radio buttons are present
- One row of controls is initially visible, the first of which is a dropdown menu showing the entry *Select condition....* The remaining controls in the row are disabled.

The user proceeds by selecting a condition from the first dropdown list. When any item other than Select condition is selected, all the remaining controls in the row become active, and the Select condition item is removed from the list so it can no longer be directly selected. Also, one or more of the intermediate controls may change type, e.g. from a dropdown list to a text field, to accommodate the chosen condition:



At this point, the user can either return to the initial *Select Condition* state by clicking the **Remove** ("-") button, or add a new rule row by clicking the **Add** ("+") button:



The user need not complete any blank fields before clicking the **Add** button; rule validation will not be performed until later.

Each new condition added begins with the first unspecified item in the first dropdown list, where possible. For example, if the available conditions are *Current location*, *Any system domain name* and *Any IP address*:

- User adds an initial rule, "Current location is Home", then clicks **Add**
- The first dropdown of the new rule is set to the first item on its list that hasn't been used yet, *Any system domain name*
- User edits new rule to read "Any IP address is 192.168.1.1", then clicks **Add**
- At this point, *Any system domain name* is still the first unused item on the list, so the first dropdown of the new rule is set to *Any system domain name*.

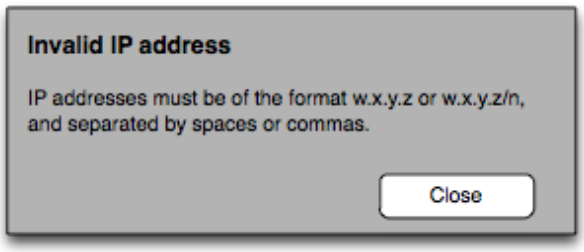
When all rule types have been exhausted, clicking **Add** adds another rule of the same type, if two rules of the same type are permissible for that component. If they are not permissible, a rule of the first permissible type on the list is added.

Removing Rows

The user can remove any row at any time by clicking its **Remove** ("-") button. When the **Remove** button of the last remaining row is clicked, the component is returned to its initial *Select Condition...* state.

Validation

Rule validation is performed whenever the user closes the dialog containing the component. If validation fails, an alert is shown that indicates the problem and the input required:



Closing the alert returns focus to the invalid entry field in the rule construction component.

Revert

The dialog has a **Revert** button in addition to the usual **OK** and **Cancel** buttons. Clicking **Revert** causes any changes made since the dialog was opened to be discarded, but the dialog remains open for further editing.

Available Conditions

In Phase 1, the following conditions are available. Not all will be required/available for each instantiation of the dialog.

Active connections	DL: include, do not include	DL: list of all available NCUs
Any IP address	DL: is, is not, is in range, is not in range	<string>
Any advertised domain name	DL: is, is not, contains, does not contain	<string>
Any system domain name	DL: is, is not, contains, does not contain	<string>
Current location	DL: is, is not	DL: list of all defined locations
Running VPN applications	DL: include, do not include	DL: list of all available ENMs
Wireless network name	DL: is, is not, contains, does not contain	EC: list of favorite networks
Wireless network BSSID	DL: is, is not	<string>

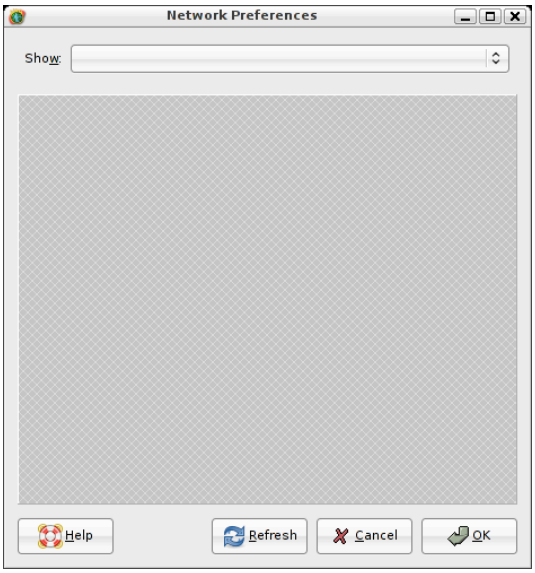
DL=dropdown list

EC=editable combo, into which user can either type or select from dropdown

<string> = text field

Network Preferences Window : Overview

This window is where you can configure individual network connections, and view the current state of each network connection. It offers access to various views, between which you switch using a dropdown list at the top of the window:



You open this dialog by either:

- Selecting *System>Administration>Network*, or
- Selecting *Network Preferences...* from the panel icon context menu.

The *Show* dropdown list comprises *Connection Status*, *Network Profile*, and a list of all connections defined in each network profile, grouped by profile name. For example:

Connection Status
Network Profile
Automatic Profile
Wired (hme0)
Wired 1 (hme1)
Wireless (bcm0)
User Profile
Wired 1 (hme1)
Wireless (bcm0)

The header items (“Automatic Profile” and “User Profile”) are disabled items in italic text.

Default view is Connection Status View (p??).

Selecting *Connection Status* from the dropdown list switches to the Connection Status View (p??)

Selecting *Network Profile* switches to the Network Profile View (p??)

Selecting a connection name from the dropdown list, or double-clicking it in connection status view, switches to the Connection Properties View (p??)

Refresh causes the NWAM subsystem to be refreshed, wireless networks rescanned, and the dialog updated if required.

Cancel closes the dialog without applying any pending changes.

OK closes the dialog and applies any pending changes, causing the NWAM subsystem to be refreshed.

Network Preferences : Connection Status View

Show this view by selecting *Connection Status* in the dropdown list at the top. Shows information about each connection in the current profile (NCP) that is either always enabled, or part of the active priority group, as configured in the Network Profile view (p??). Connections that are always disabled, or that are part of an inactive priority group, are not shown in this view.

Enabled Connections lists enabled connections in the same order as in the Network Profile View (p??); that is, the order in which connections are attempted. The order cannot be changed here, however, but only in the Network Profile View.

Icon indicates type of connection (wired or wireless; in later project phases, tunnel, aggregation etc.) and current status (connected/disconnected for wired or wireless, plus signal strength and security type for wireless).

Bold text for each connection shows *InterfaceType (LinkName)*. Current status is shown on the same line, right-aligned. Status is one of:

Connecting	A wired interface is attempting to connect, but is not yet connected
Connected	A wired interface is connected
Connecting to ESSID [icon]	A wireless link is attempting to connect to the network with the given ESSID. Icon indicates whether network is open or secured.
Connected to ESSID [icon]	A wireless interface is connected to the network with the given ESSID. Icon indicates whether network is open or secured.
Network unavailable	Wired or wireless interface is up but non-functional, e.g. unable to contact DHCP server or gateway.
Cable unplugged	Wired link is enabled but cable is unplugged.
Not connected	Wired or wireless interface is enabled but down.

Secondary text for each active connection consists of three elements, separated by spaces:

"Address: IPv4/IPv6 address / CIDR subnet mask" or "Multiple IPs" or "DHCP" (IPv4 only) or "DHCPv6" (IPv6 only) or "Autoconf" (IPv6 only)	"Signal: n%"	"Speed: n Mb/s"

Double-clicking a connection switches the status view to that connection's properties view (p??)

Network Profile shows the current network configuration profile (NCP), and allows you to switch between them. In Phase I, there are only two profiles available: *Automatic* and *User*.

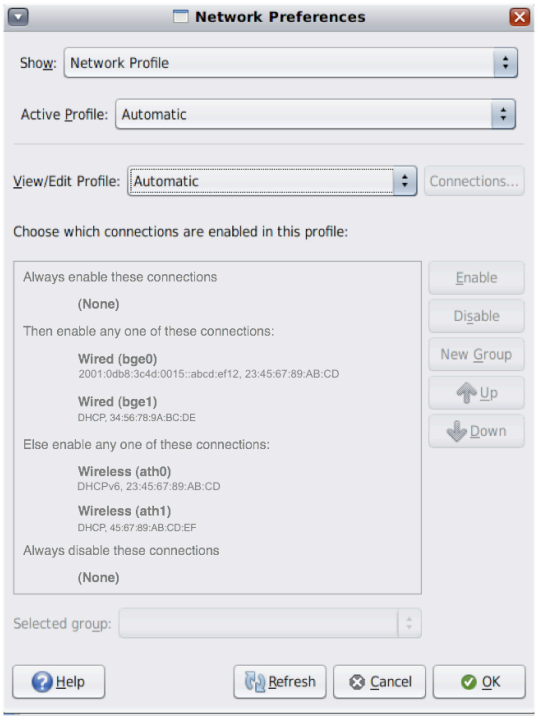
Current Location shows the currently active location. **Edit Locations...** button opens the Network Locations dialog (p??)

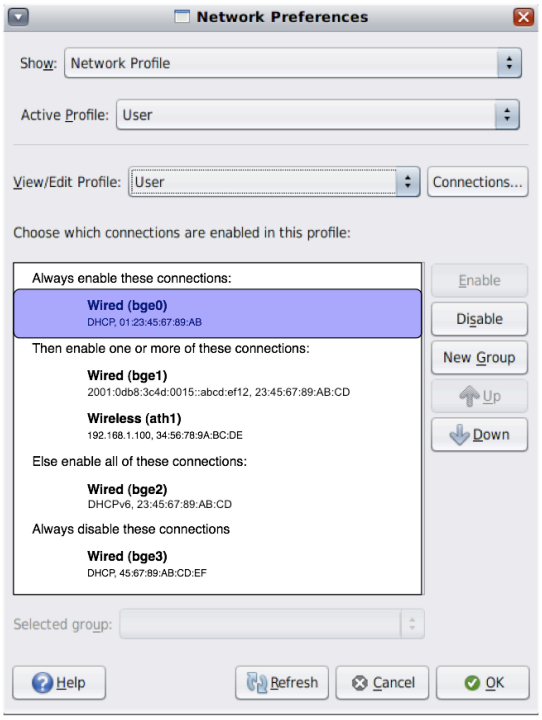
VPN lists any currently-running VPN application, e.g. "CiscoVPN active" if a single application is active, "*n* active" if two or more applications are running, or "None active". Click the **Edit VPN**... button to open the VPN Preferences dialog (p??) where applications can be configured, started and stopped.

Not in Phase 1: *Advanced* expander, collapsed by default, reveals a **Repair Selected** button that is enabled for interfaces that are reporting connectivity problems (except those for which the cause is physical, e.g. unplugged cable). Clicking the button attempts to re-establish the connection by whatever means available, e.g. renewing the DHCP lease.

Network Preferences : Network Profile View

This view allows inspection, switching and editing of of the current network configuration profile (NCP), of which there are two in NWAM Phase I: *Automatic* and *User*. Show this view by selecting Network Profile in the dropdown list at the top of the window.





The *Active Profile* dropdown lists all available network profiles, and shows the current active network profile. You can make a different network profile active by selecting it from the list, then clicking **OK**. If the *User* profile has not yet been created, it is still shown in the dropdown list, and created as a copy of the *Automatic* profile when selected.

The *View/Edit Profile* dropdown lists all available network profiles (only *Automatic* and *User* in Phase 1), and shows the current active network profile by default. If the *User* profile has not yet been created, it is still shown in the dropdown list, and created as a copy of the *Automatic* profile when selected.

The network connections (NCUs) of the selected profile are shown in a tree view below. The expander arrows are not shown in the tree, instead the top level nodes of the tree act as headers for their child nodes. *TBD: or we could just show the arrows and have it behave like a normal tree, but I think I'd prefer to try it without, first. Also, do we want to any kind of icons for the NCUs in the list?*

The tree view will consist of at least two top level nodes:

- "Always enable these connections:" The children of this node are NCUs whose activation mode is Manual, and whose enabled state is True, listed in alphabetical order. If there are no such NCUs, a single child item "(None)" is shown.
- "Always disable these connections:" The children of this node are NCUs whose activation mode is Manual, and whose enabled state is False, listed in alphabetical order. If there are no such NCUs, a single child item "(None)" is shown.

If there are any prioritized groups in the network profile, these will be shown between the "always enable" and "always disable" groups, highest priority first, with one top level node for each group. Their NCUs are listed in alphabetical order. The text of the top level node for a prioritized group is as follows:

The first word of the text is "Then" for the highest priority group, or "Else" for any other priority group.

- For groups of type Exclusive, the rest of the text is "enable any one of these connections:"
- For groups of type Shared, the rest of the text is "enable one or more of these connections:"
- For groups of type All, the rest of the text is "enable all of these connections"

Primary text for all NCUs in the tree view is *InterfaceType (LinkName)*. Secondary text consists of two items, separated by spaces:

"Address: IPv4/IPv6 address / CIDR subnet mask" or "Multiple IPs" or "DHCP" (IPv4 only) or "DHCPv6" (IPv6 only) or "Autoconf" (IPv6 only)	MAC address

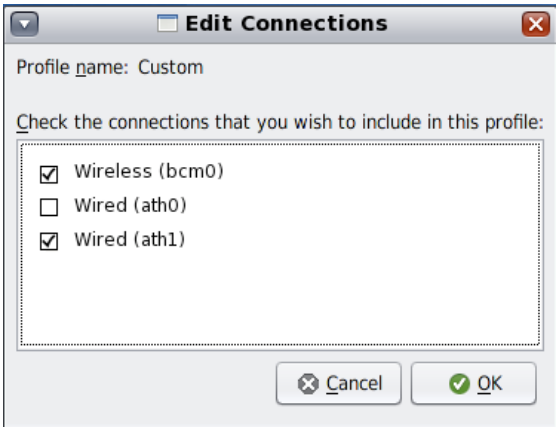
Double-clicking a connection switches the status view to that connection's properties view (p??).

Automatic Profile

The Automatic profile is read-only. When the Automatic profile is selected in the *View/Edit Profile* dropdown, all of the profile editing buttons and dropdown lists are disabled. See figure on previous page, top left.

Adding/Removing Connections from the User Profile

The **Connections** button is enabled only when the *User* profile is selected for editing in the *View/Edit Profile* dropdown. Clicking **Connections** opens the *Edit Connections* dialog:



The list shows all the connections that are currently available in the *Automatic* profile. (Rationale: It is assumed that any connections not available in the *Automatic* profile have not been correctly configured/installed, so that must be rectified before they can be added to user-defined profiles.)

Check a connection to include it in the profile being edited, uncheck it to remove it from the profile being edited. It is not possible to uncheck a connection if it is currently the only checked connection in the profile. (*Or would it be better just to verify that you had at least one connection checked when you clicked OK? Or is it valid/useful to allow a user-defined profile with no NCUs?*)

Enabling and Disabling Connections

The **Enable** button is enabled only when an NCU in the "always disabled" group, or in any prioritized group, is selected. Click **Enable** to move the selected NCU from its current group to the "always enabled" group. Alternatively, you can drag and drop the NCU into the "always enabled" group. In either case, the NCU remains selected afterwards.

The **Disable** button is enabled only when an NCU in the "always enabled" group, or in any prioritized group, is selected. Click **Disable** to move the selected NCU from its current group to the "always disabled" group. Alternatively, you can drag and drop the NCU into the "always disabled" group. In either case, the NCU remains selected afterwards.

You can also move NCUs between the "always enabled" and "always disabled" groups by clicking the **Up** and **Down** buttons. The **Up** button is enabled when any NCU that is not in the "always enabled" group is selected. The **Down** button is enabled when any NCU that is not in the "always disabled" group is selected.

Clicking **Up** moves the selected NCU out of its current group to the group above, which may be a priority group or the "always enabled" group. Clicking **Down** moves the selected NCU out of its current group to the group below, which may be a priority group or the "always disabled" group. The NCU remains selected afterwards.

Working with Priority Groups

The **New Group** button is enabled whenever one or more NCUs are selected, or when the "always enabled" group header is selected, or when the "always disabled" group header is selected. Click **New Group** to create a new priority group comprising those NCUs. The group is created with type Exclusive by default, with a priority lower than any existing priority groups.

Adding/Removing NCUs

You can move an NCU in or out of a priority group by clicking the **Up** and **Down** buttons. The **Up** button is enabled when any NCU that is not in the "always enabled" group is selected. The **Down** button is enabled when any NCU that is not in the "always disabled" group is selected.

Clicking **Up** moves the selected NCU out of its current group to the group above, which may be a priority group or the "always enabled" group. Clicking **Down** moves the selected NCU out of its current group to the group below, which may be a priority group or the "always disabled" group. The NCU remains selected afterwards.

Alternatively, you can move an NCU out of a priority group by selecting it, then clicking **Enable** or **Disable** to move it to the "always enabled" or "always disabled" group.

You can also move NCUs in or out of priority groups by dragging and dropping them.

When the last NCU is moved out of a priority group, the group no longer exists and is removed from the tree view.

Changing Priority Mode

To change the priority mode of a list, select its top-level node or any of its child NCUs in the tree view. This enables the *Selected group* dropdown below the tree view, with the priority mode of that group selected. Choose a different value from the dropdown to change the selected group's priority mode:

- "Exactly one connection is enabled": (*Exclusive* mode) NWAM will enable one connection in the group, and disable the others. As long as NWAM is able to keep exactly one connection in the group alive (not necessarily the same one all the time), it will not attempt to enable connections in any lower priority groups.
- "One or more connections may be enabled": (*Shared* mode) NWAM will enable all connections in the group that it is able to do so. As long as at least one connection in the group remain alive, NWAM will not attempt to enable connections in any lower priority groups.
- "All connections must be enabled": (*All* mode) NWAM will enable all the connections in the group. As long as all connections remain alive, NWAM will not attempt to enable connections in any lower priority groups.

Increasing/Decreasing Priority

To increase the priority of a group, select its top-level node and click the **Up** button. The group will swap places with the group immediately above it in the list, with both groups' priorities adjusted accordingly. The **Up** button will be disabled if the selected group already has the highest priority of the priority groups in the profile.

To decrease the priority of a group, select its top-level node and click the **Down** button. The group will swap places with the group immediately below it in the list, with both groups' priorities adjusted accordingly. The **Down** button will be disabled if the selected group already has the lowest priority of the priority groups in the profile.

Deleting Priority Groups

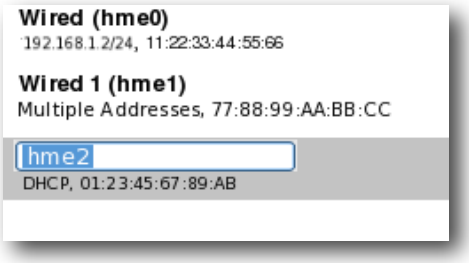
To explicitly delete a priority group, select its top-level node. At this point, the **New Group** button will be enabled, and its label changed to **Remove Group**. Click **Remove Group** to set the activation mode of all the group's NCUs to Manual, and their enabled state to Disabled. The priority group then no longer exists and is removed from the tree view.

A priority group will also be deleted when its last NCU is moved to a different group. The priority group then no longer exists and is removed from the tree view.

Renaming Connections

Not in Phase 1

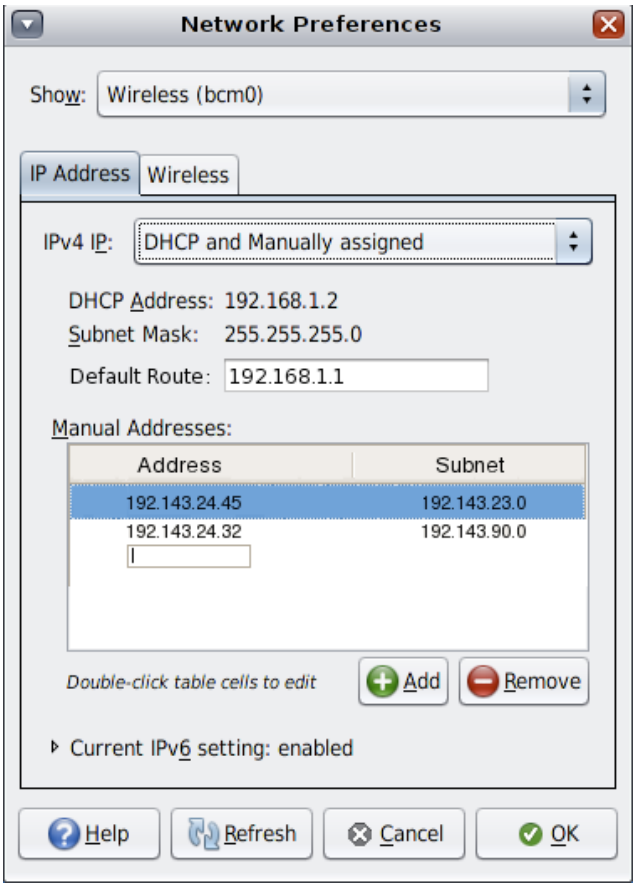
To change a link's vanity name, select it and click **Rename**. This opens an embedded text field in the tree view, the contents of which are the link's current (possibly default) name. Text is selected, ready for overtyping:



Specify a new vanity name by entering new text and pressing *Return*. Press *Esc* to dismiss the text field with no changes to the vanity name.

Network Preferences : Connection Properties Overview

This view allows you to choose how the IPv4 and IPv6 addresses for a specific network connection are obtained, and for wireless interfaces, how and when wireless connections are automatically attempted. The network interface is selected from the *Show* dropdown list at the top of the window.

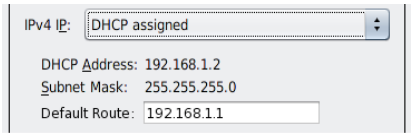


When you select a network interface, a tabbed view appears allowing you to edit its properties. For all connection types, the first tab is the *IP Address* tab, on which you configure its IPv4 and IPv6 addresses. For wireless connections, a *Wireless* tab also appears, on which you choose the way in which the wireless interface connects to available wireless networks.

Connection Properties : IP Address (IPv4)

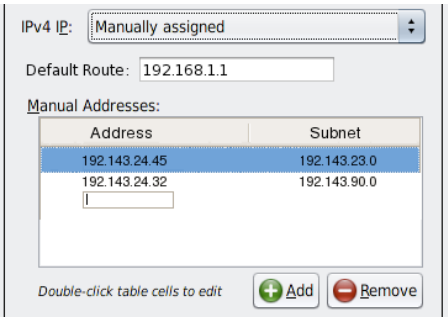
IPv4 addresses can be assigned automatically, manually or disabled for each network interface. The controls shown vary dynamically based on the selection made from the *Current IPv4 setting* dropdown list:

Disabled: No IPv4 address is assigned to this network interface, and all other IPv4 configuration controls are hidden.

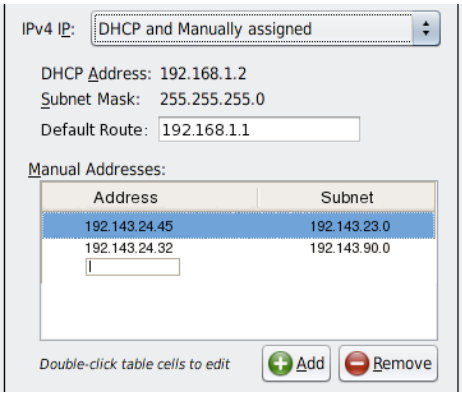


DHCP assigned: when this option is selected, the *DHCP Address* and *Subnet* fields are provided via DHCP and shown as static labels. The *Default Route* field is read-only if the route has been assigned by the DHCP server, and editable (and empty by default) if the route must be assigned manually.

The *Manual Addresses* configuration table is hidden.



Manually Assigned: when this option is selected, the *Default Route* field is editable (and empty by default), and a table is shown in which you can enter one or more *Address* and *Subnet* pairs. This is an editable table as defined on p??. The overlaid control used for both the *Address* and *Subnet* cells in each row is a text box.



DHCP and Manually assigned: when this option is selected, one address and subnet pair are provided via DHCP, and shown as static labels. The *Default Route* field is read-only if the route has been assigned by the DHCP server, and editable (and empty by default) if the route must be assigned manually. Finally, one or more *Address* and *Subnet* pairs can be entered in the *Manual Addresses* table. This is an editable table as defined on p??. The overlaid control used for both the *Address* and *Subnet* cells in each row is a text box.

Persistence

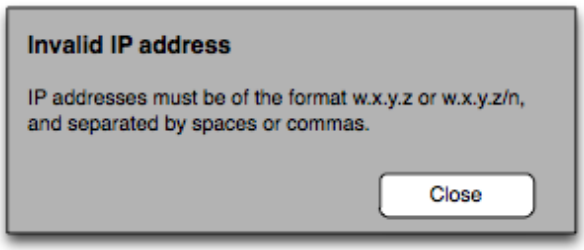
When switching between *DHCP assigned*, *Manually assigned* and *Multiple addresses*, any data that was entered is stored in case you later switch back to that view. This data is also remembered between sessions.

Address format and validation

For the *Manually Assigned* and *Multiple Addresses* input modes, you may enter the IP addresses and subnets separately in their respective text boxes, in the format `w.x.y.z`.

Alternatively, you may enter an address in the CIDR format `w.x.y.z/n`, where n is an integer from 0-32 representing the subnet mask. In this case, the corresponding *Subnet* field is cleared and disabled when keyboard focus is moved out of the *Address* field. Keyboard focus will therefore move to the next control after the subnet field. If the address is subsequently changed to the format `w.x.y.z`, the corresponding *Subnet* field is re-enabled when keyboard focus is moved out of the *Address* field.

Address and subnet syntax is checked when you switch to a different tab, click **OK**, or select a different item from the *Show* dropdown at the top of the dialog. An appropriate alert is shown if any of the fields are invalid, for example:

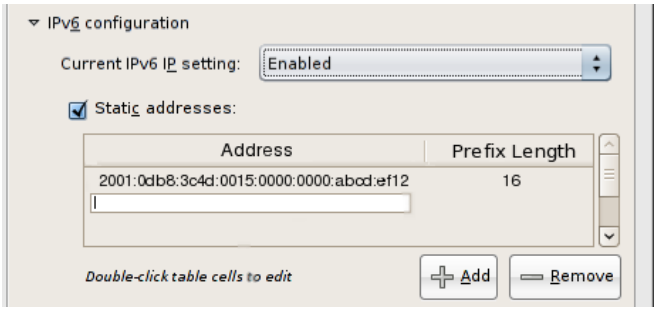


Dismissing the alert focuses the offending field ready for input.

Connection Properties : IP Address (IPv6)

IPv6 addresses can be assigned automatically, manually or disabled for each network interface. The controls shown vary dynamically based on the selection made from the *Current IPv6 setting* dropdown list, which is one of the controls in the *IPv6 Configuration* expander.

The expander is collapsed by default for interfaces for which IPv6 is disabled, and expanded by default for interfaces for which IPv6 is enabled.



Disabled: No IPv6 addresses will be assigned to this network interface.

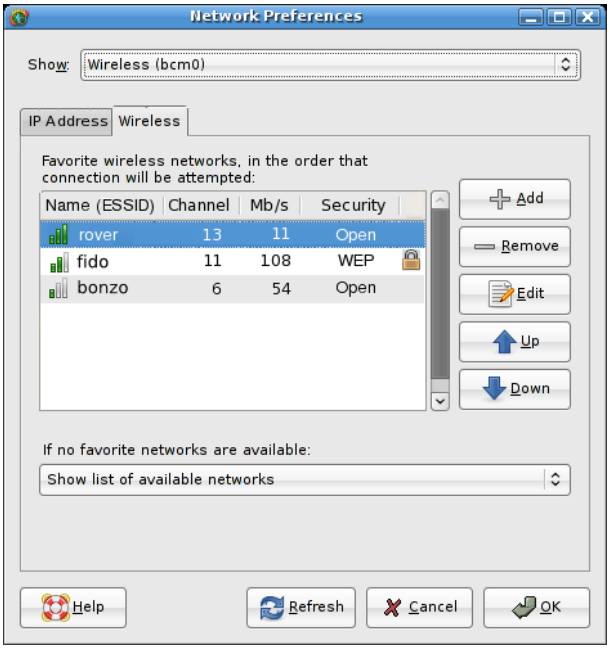
Enabled: when this option is selected, the network interface the network interface attempts to obtain IPv6 address(es) via DHCP and/or Autoconfiguration.

Static Addresses: When checked, the table below the checkbox is enabled to allow assignment of manual IPv6 addresses to the network interface. These addresses will be assigned *in addition to* the address obtained via DHCPv6 or Autoconfiguration. The table is an editable table as defined on p??, with text fields used as the overlaid input controls for both the *Address* and *Prefix Length* fields. Their syntax is checked when you switch to a different tab, click **OK**, or select a different item from the *Show* dropdown at the top of the dialog. An appropriate alert is shown if any of the fields are invalid.

When the *Static Addresses* box is unchecked, the table is disabled but remains visible.

Connection Properties : Wireless

This tab only appears when a wireless network interface is selected from the *Show* dropdown list at the top of the window.



The list shows your current favourite (or “bookmarked”) networks, in the order in which any automatic connection will be attempted.

First column shows signal strength and name (ESSID). Second column shows wireless channel, third column shows speed, fourth column shows security type, with a right-aligned 'secure' icon for secure networks. List is re-orderable using drag and drop, or the **Up** and **Down** buttons.

If no favorite networks are available when a wireless connection is attempted for this interface, a dropdown list offers the choice of what to do:

- *Show list of available networks*: opens the wireless network chooser dialog (p??) to ask which other network to join.
- *Join an open network (not in Phase 1)*: attempt to join any available unsecured wireless network, starting with the one with the strongest signal. If the *Ask before joining a new open network* preference is checked (see next page), you will be asked to confirm before joining any open networks.
- *Do not connect*: do not attempt to join any other wireless network until new networks are detected, or a different Network Profile or Location is selected.

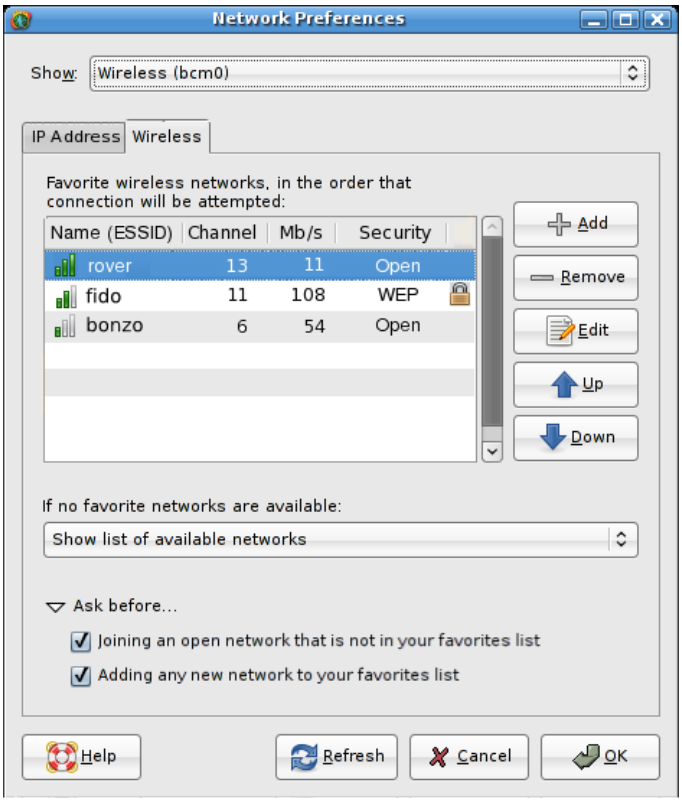
Add opens the Add Wireless Network dialog (p??), but with its *Add to favorite networks* checkbox hidden.

Remove deletes the selected network from the list.

Edit opens the Edit Wireless Network dialog (p??), preloaded with the the selected network's details, and with its *Add to favorite networks* checkbox hidden. The **Edit** button is disabled if no network is selected in the list.

Up/**Down** buttons move the selected network up/down in the list. **Up** is disabled when the selected network is at already at the top, likewise **Down** is disabled when the selected network is already at the bottom.

The *Ask before...* expander controls how many questions you are asked when joining wireless networks. It is collapsed by default. *In fact the expander will not be shown at all in Phase 1, as none of these options are currently supported by NWAM.*



- *Joining an open network that is not in your favorites list (default=yes)*: If checked, causes the Join Wireless Network dialog (p??) to appear when an attempt is made to join an open network because no favorite networks were available. The dialog is pre-filled with the network's name and security type (which will always be "None" in this case).

  If unchecked, open networks are joined automatically when no favorite networks are available, with no interaction necessary.

- *Not in Phase 1: Joining any favorite network (default=no)*: If checked, causes the Join Wireless Network dialog (p??) to appear when an attempt is made to join a favorite network (either open or secure). The dialog is pre-filled with the network's name, security type and any saved password information.

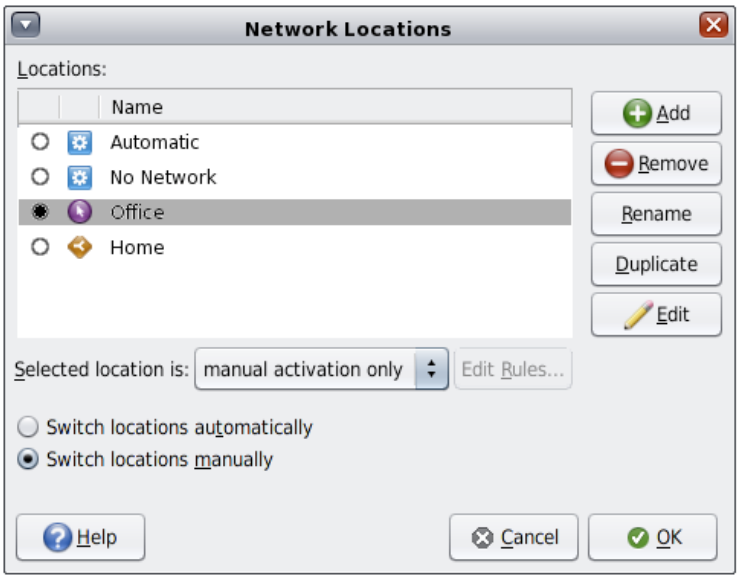
  If unchecked, favorite networks are joined automatically as required, provided any necessary credentials have previously been entered and saved.

- *Adding any new network to your favorites list (default=yes)*: If checked, causes the *Add to favorite networks* checkbox to appear in the Add Wireless Network (p??) and wireless network chooser dialogs (p??), whenever they are shown.

  If unchecked, new networks will be added to the favorites list automatically on first connection, with no interaction necessary.

Network Locations Dialog

This dialog allows you to switch locations, edit their properties, and create new locations. Open this dialog by choosing *Network Locations* from the panel applet's right-click menu, or from *System>Administration>Network Locations*.



The *Locations* list is analogous to that on the panel icon context menu; it lists each available location, with an icon representing its activation type: *system*, *manual* or *conditional*. The mode of the selected location is also shown by the *Selected location* dropdown list.

The current location is represented by a radio button indicator. Selecting the radio button of a manual location other than the current location attempts to activate that location when the **OK** button is clicked.

Changing location activation modes

To change the activation mode of a location, select it in the list, and select the new mode from the *Selected location* dropdown below the list. Note that when a system location is selected, the dropdown list and **Edit Rules** button are disabled, and the dropdown list entry *activated by system* is shown.

When a manual or conditional location is selected, the dropdown list options are:

- *manual activation only*: this location is only enabled when it is manually selected. When this option is selected, the **Edit Rules** button is disabled.
- *activated by Rules*: the location will be automatically selected when certain network conditions occur. When this option is selected, the **Edit Rules** button is enabled. Clicking the button opens a Rule Editing dialog (p??), with the following parameters:
  - Condition Text: Activate location '*name*' if the following conditions are true:
  - Match any/all radio buttons: shown
  - Conditions: Active connections, Any IP address, Any advertised domain name, Any system domain name, Current location, Running VPN applications, Wireless network name. (See available conditions, p??)

Changing how locations are activated

The *Switch locations* radio buttons control how locations are activated.

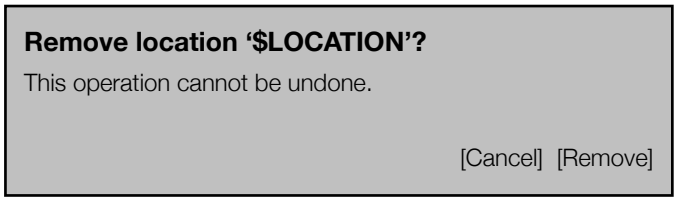
- *Switch locations automatically (default)*: In this mode, you have no direct control over location changes, so all the locations in the list are grayed-out. The most appropriate System or Conditional location will be activated at any time, in response to network environment changes.
- Switch locations manually: In this mode, you have full control over location changes, so each location in the list can be activated by clicking its radio button, regardless of its activation type. Any location you activate in this way will remain active until you activate a different location, or select *Switch locations automatically*.

Adding locations

To add a new location with default settings, click the **Add** button. A new location (of activation type Manual) will be created with the name "Unnamed Location *N*". The "N" is not shown for the first unnamed location, and is the lowest numerical value >=1 that would make the location name unique. The new location is selected (but not activated) in the list, and is placed into editing mode as if the user had clicked the **Rename** button (see below).

Removing locations

To delete the selected location, click the **Remove** button. A confirmation alert appears:

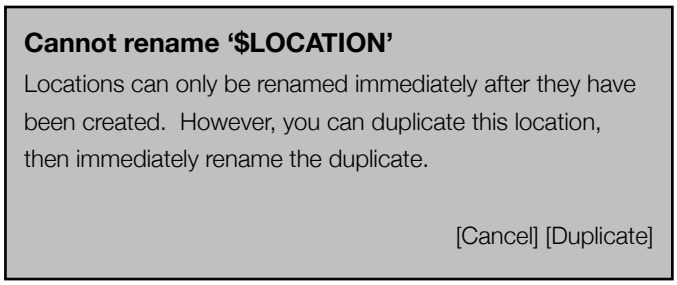


The **Remove** button is disabled when a system location (*Automatic* or *No Network)* is selected, as they cannot be deleted.

Renaming locations

To rename a location, double-click its name, or select it and click the **Rename** button. This causes the location name to be replaced by an in-place text field in the list, whose contents are the current name, fully selected. This allows immediate overtyping of a new name. The user can press *Enter* to accept the new name and exit the editing mode, or *Esc* to revert to the previous name and exit the editing mode.

A location can only be renamed if it has been added since the Network Locations dialog was opened. If a location that existed prior to opening the dialog is selected, an alert is displayed when the **Rename** button is clicked:



Duplicating locations

To duplicate the selected location, click the **Duplicate** button . A new location will be created with the name "Copy of *LOCATION*" if that name is unique, otherwise "Copy of *$LOCATION N*" where N is the lowest numerical value >=1 that would make the location name unique. The new location is selected (but not activated) in the list, and is placed into editing mode as if the user had clicked the **Rename** button (see above).

Editing locations

To edit the properties of a location, select it in the list and click the **Edit** button. This opens the Edit Location dialog (p??).

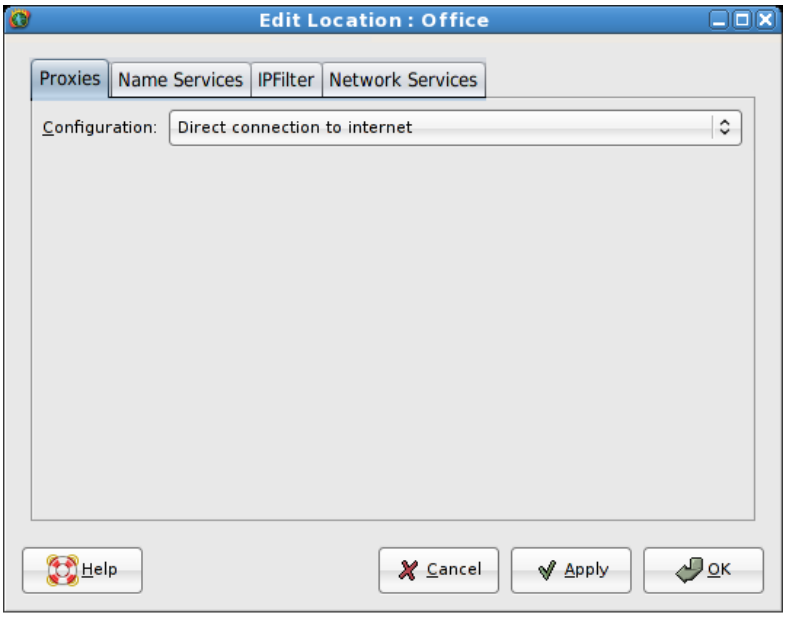
Clicking **Duplicate** creates a new location with the default name "Copy of $LOCATION *N*" (see above for value of *N*).

Clicking **Cancel** discards the alert box with no further action.

Edit Location : Proxies - NOT IN PHASE 1

The Edit Location dialog is opened by clicking the **Edit** button in the Network Locations dialog. It allows you to edit the Proxies, Name Services, Security and Network Services for the selected location.

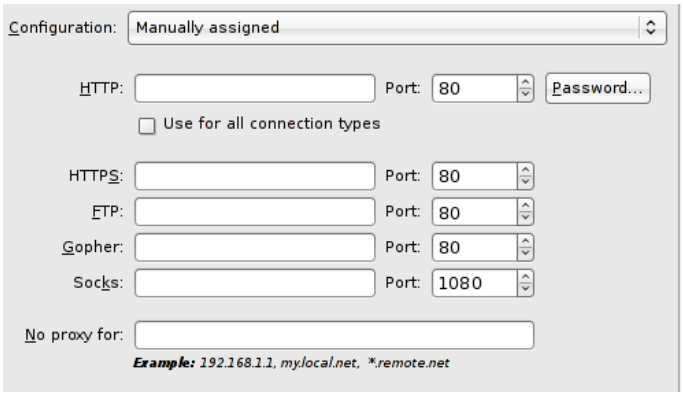
The *Proxies* tab is the first in the dialog, and selected by default.



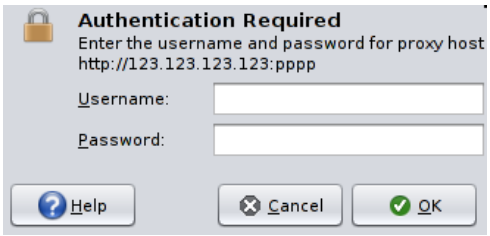
If no proxy is required for this location, select *Direct connection to internet* from the *Configuration* dropdown. This is the default setting for new locations. No other controls are visible on the tab when this setting is chosen.

Using a manual proxy

To manually assign a proxy, select *Manually assigned* from the *Configuration* dropdown. The tab contents change to show the manual proxy controls:



Fill in the HTTP proxy hostname (default is blank) in the HTTP field, and port number (default is 80) in the Port field. If the HTTP proxy requires authentication, click **Password** to open a dialog where you can enter a username and password:

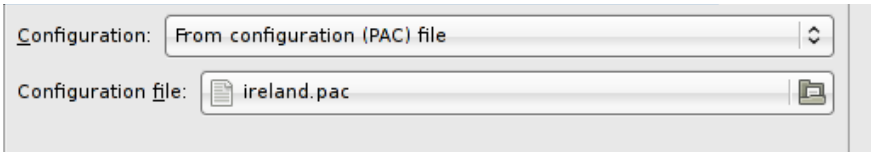


To use the same proxy host and port number for all other services, check the *Use for all connection types* checkbox. The *HTTPS*, *FTP*, *Gopher* and *Socks* text fields and spin boxes are then populated with the same information as in the HTTP field and spin box, and are greyed out to disallow editing. Unchecking the box re-enables the controls, and replaces their contents with their last contents before *Use for all connection types* was checked, so you can now enter a proxy host and port number for each connection type individually.

To bypass the proxy for connections to certain hosts, enter their names or IP addresses in the No proxy for field, separated by spaces or commas. (See equivalent Firefox dialog for allowed syntax.)

Using a Proxy Configuration (PAC) file

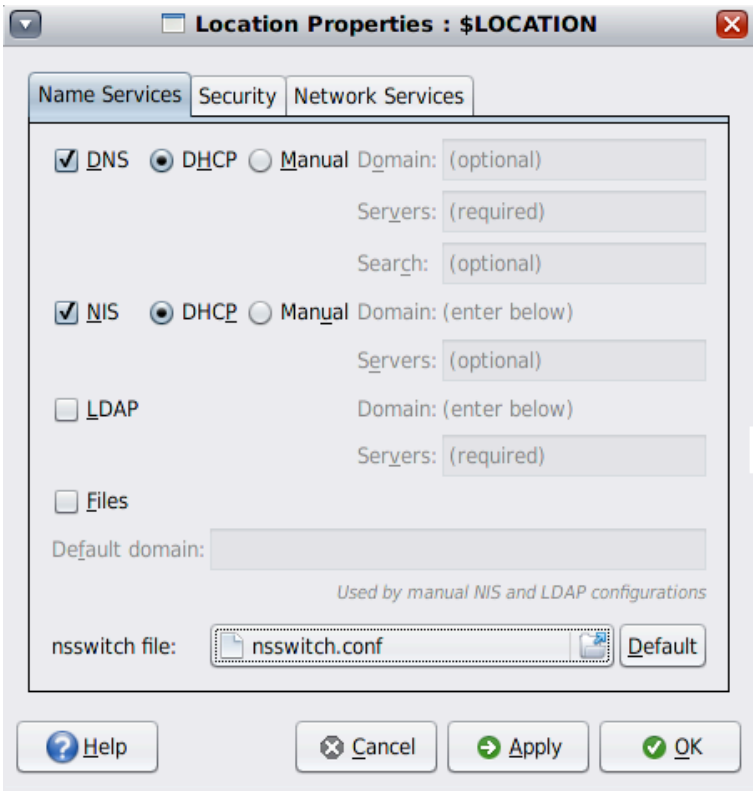
To use a proxy configuration file, choose *From configuration (PAC) file* from the *Configuration* dropdown. The only other control now visible will be a file chooser button (default selection: the last-selected PAC file, or (None) if no file has previously been chosen):



Clicking the button opens a standard gtk file chooser dialog, filtered on .pac files. If an existing .pac file is already in force, the dialog opens in its containing directory, otherwise in the user's home directory.

Edit Location : Name Services

This tab allows you to configure name services that are used when the location is active.



Check one or more of the *DNS*, *NIS*, *LDAP* or *Files* checkboxes to specify which services should be configured for this location.

- DNS: When checked, the *DHCP* and *Manual* radio buttons are enabled. When unchecked, the radio buttons are disabled. When the *DHCP* radio button is selected (default), the *Domain*, *Servers*, and *Search* fields are disabled, and the DNS service is configured via DHCP. When the *Manual* radio button is selected, the *Domain*, *Servers*, and *Search* fields are enabled.

  Domain (optional): type one or more DNS domain names into the text field, separated by spaces or commas.

  Servers (required): type one or more DNS server names into the text field, separated by spaces or commas.

  Search (optional): type one or more DNS search domain names into the text field, separated by spaces or commas.

- NIS: When checked, the *DHCP* and *Manual* radio buttons are enabled. When unchecked, the radio buttons are disabled. When the *DHCP* radio button is selected (default), the *Domain* and *Servers* fields are disabled, and the NIS service is configured via DHCP. When the *Manual* radio button is selected, the *Domain* and *Servers* fields are enabled.

  Domain: a static text label that reflects the contents of the *Default domain* field below. To specify an NIS domain, you must type it into the Default domain field. While the *Default domain* field is empty, the text "(enter below)" is shown as the NIS domain.

  Servers (optional): type one or more server names into the text field, separated by spaces or commas.

- LDAP: When checked, the *Domain* and *Servers* fields are enabled. When unchecked, the *Domain* and *Servers* fields are disabled.

  Domain: Domain: a static text label that reflects the contents of the *Default domain* field below. To specify an NIS domain, you must type it into the Default domain field. While the *Default domain* field is empty, the text "(enter below)" is shown as the LDAP domain.

  Servers (required): type one or more server names into the text field, separated by spaces or commas.

- Files: no further configuration options available.

Nsswitch File is a file selection button that allows you to choose the name service configuration file that is used for this location. Note that editing the values in this dialog do not cause any changes to be written to this file, so you may still need to edit the selected configuration file by hand to achieve the exact behaviour you require.

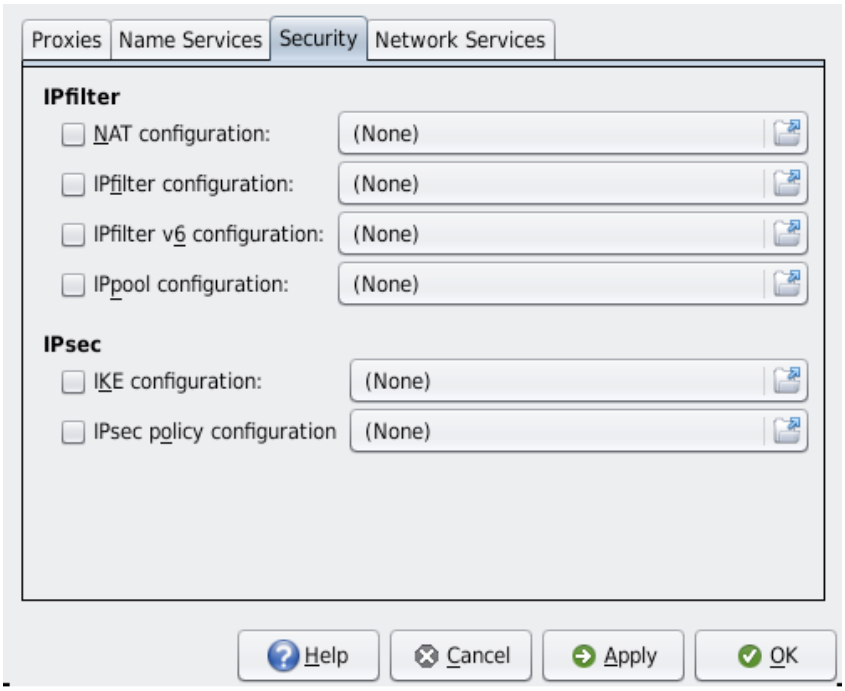
The default value of the file selection button depends on how many name services are checked above:

- if more than one name service is checked, the default value is `/etc/nsswitch.conf`
- if only one name service is checked, the default value is the nsswitch file for that service (e.g. `/etc/nsswitch.dns` if only the DNS service is checked)

The **Default** button is enabled only when one service is checked, and when the current value of the file selection button is *not* the default nsswitch file for that service. Clicking the **Default** button changes the selected file to the appropriate default for that service. For example, `/etc/nsswitch.dns` if only the DNS service is checked, or `/etc/nsswitch.files` if only the Files service is checked.

Edit Location : Security

This tab allows you to select configuration files to be used by IPfilter and IPsec features when the location is active.



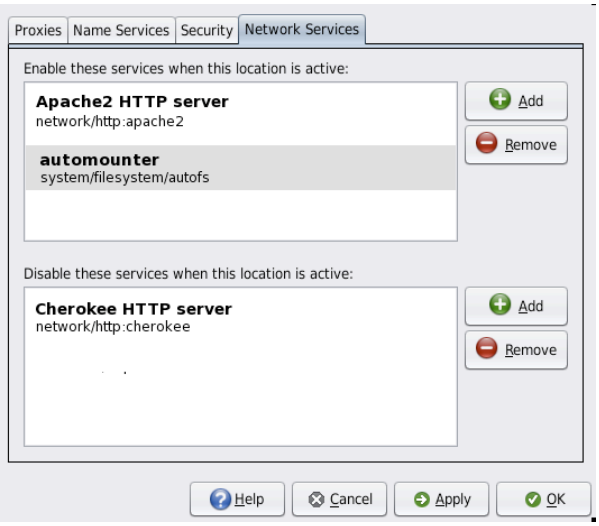
Each checkbox / file chooser button combination behaves the same way:

- When you check a box, the corresponding file chooser button is enabled. If no filename is currently associated (i.e. the file chooser button is showing "(None)"), a file selection dialog is opened immediately, allowing you to choose the configuration file. (If you cancel this dialog, the box is automatically unchecked again.) Otherwise, the filename that was already showing in the button will be used until you click the file chooser button.
- When you uncheck a box, the corresponding file chooser button is disabled, and the filename shown in the button will no longer be associated with that feature when the location is active. However, the last-used filename remains visible in the disabled control, and is remembered between sessions. This allows the filename to be quickly re-associated with the feature simply by checking the corresponding box.

No changes are made to running IPfilter, NAT or IPsec services until you click the Apply or OK button.

Edit Location: Network Services - NOT IN PHASE 1

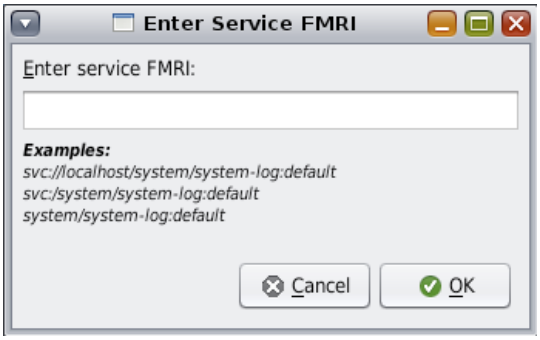
This dialog allows you to specify specific SMF services that should be enabled or disabled when the location becomes active.



The first list, labelled *Enable these services when this location is active*, is a list of SMF services to be explicitly enabled when the location becomes active. The primary bold text for each list entry shows the name of the service, the smaller secondary text shows its FMRI.

Similarly, the second list, labelled *Disable these services when this location is active*, is a list of SMF services to be explicitly disabled when the location becomes active.

Both lists are empty by default for a newly-created location. To add a service to either list, click the **Add** button beside the list. This opens a sub-dialog into which the FMRI of the desired service can be entered:



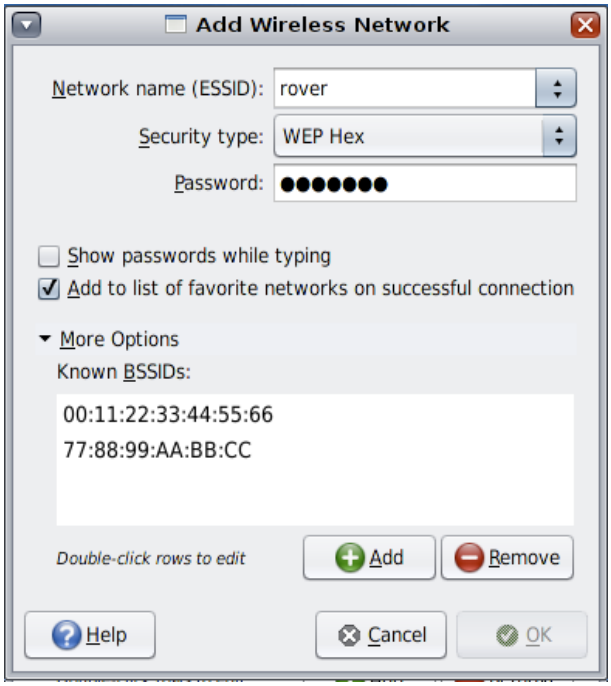
An FMRI can be entered in one of three ways: first as an absolute path including a location path such as "localhost"; second as a path relative to the local machine; and third as simply the service identifier with the string prefixes implied. Clicking the **OK** button checks the validity of the FMRI, and adds the service to the list if it exists. Otherwise, an alert is shown which, when dismissed, returns focus to the FMRI field for amendment.

TBD: Should probably really have a separate alert for each case (invalid format, and non-existent service).

To remove a service from either list, select the service and click the **Remove** button.

Add/Join/Edit Wireless Network

This dialog asks for information about a specific wireless network.



The dialog is opened in several ways:

- Manually, by selecting *Join Unlisted Wireless Network* on the panel icon context menu (p??). The title bar text in this case is "Join Wireless Network"
- Manually, by clicking **Add** or **Edit** in the Connection Properties, Wireless tab (p??). As much information as is already known about the network (its ESSID, and any previously-entered username and passwords that have been stored locally) will be pre-filled when the dialog appears. The title bar text in this case is "Add Wireless Network" or "Edit Wireless Network", accordingly.
- Manually, by clicking the "No wireless networks found" notification message (p??). The title bar text in this case is "Join Wireless Network"
- (*Not in Phase 1*) Automatically, if any of the "Ask Before" criteria in the Connection Properties, Wireless tab are satisfied (p??). The title bar text in this case is "Join Wireless Network" or "Add Wireless Network" accordingly.

Network Name (ESSID): The name of the wireless network you wish to connect to. This is a combo box whose dropdown lists the currently available wireless networks that are broadcasting their ESSID. The combo box is enabled in the *Add Wireless Network* and *Join Wireless Network* dialogs, but disabled in the *Edit Wireless Network* dialog.

Security Type: A dropdown list of supported security protocols. When connecting to an access point that is broadcasting its ESSID, the security type is pre-selected when the dialog opens or when the ESSID is entered in the field above. Password fields vary according to selection, see next page.

Show passwords while typing: If unchecked (default), typing will be masked in password fields. If checked, the password field will be shown in plain text while it has focus, and revert to mask characters when focus is lost.

Add to favorite networks list: This checkbox is:

- (*Not in Phase 1*) Visible, if the dialog is opened from the panel icon context menu, and the *Ask before adding any new network to favorites* checkbox in the connection's Connection Properties, Wireless tab (p??) is also checked.
- (*Not in Phase 1*) Hidden, if the dialog is opened from the panel icon context menu, and the *Ask before adding any new network to favorites* checkbox in the connection's Connection Properties, Wireless tab (p??) is *not* checked.
- Hidden, if the dialog is opened from the **Add** button on the Connection Properties, Wireless tab.

If the box is checked, the specified network is added to the Favourites list once a successful connection is made.

The *More Options* expander is collapsed by default. It expands to show:

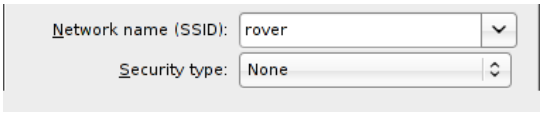
- *Known BSSIDs :* A list of MAC addresses of the access points that are known to be associated with this ESSID, which is used by NWAM to identify known wireless networks. This is an editable table as defined on p??.

The **OK** button is disabled until a network name is entered. When the user clicks **OK**, an alert is displayed if:

- The two passwords entered do not match
- The passwords match but are an invalid format/length
- A BSSID is provided but is an invalid format (should be MAC address format)

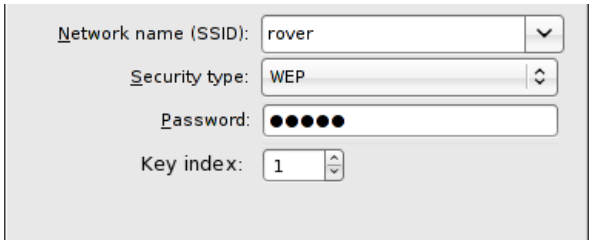
When the alert is dismissed, the offending field is focused ready for input.

Security type *None*:



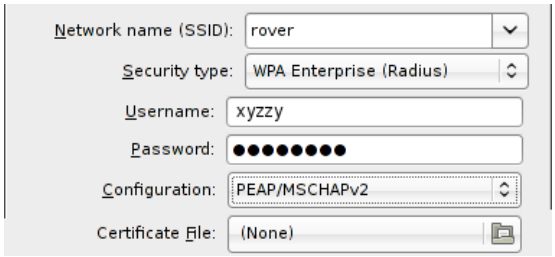
- Open network, no password fields displayed. *Show passwords while typing* field is disabled.

Security types *WEP* and *WPA Personal*:



- *Password:* 5- or 13-character password (WEP), or 10- or 26-digit hex string (WEP), or 8-63 character passphrase (WPA Personal) required to join specified network, initially blank.
- *Key Index:* Only visible when WEP is selected. Determines which of the four possible WEP keys generated from the specified passphrase should be used. Valid Range: 1-4.

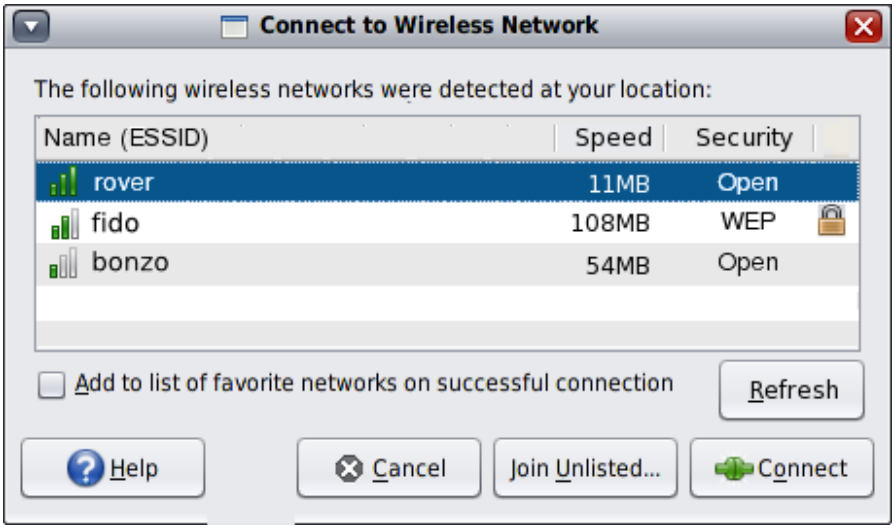
Security type: *WPA Enterprise (not supported in Phase 1)*:



- *Username, Password:* WPA username and password
- *Configuration: LEAP* or *PEAP/MSCHAPv2*
- *Certificate File:* Click to open a file chooser from which the certificate file can be selected *TBD is there a file extension on which we could/should filter?*. Only valid for *PEAP/MSCHAPv2* configuration; button is disabled if *LEAP* configuration is selected.

Wireless Network Chooser

This dialog shows the wireless networks that are currently available, and allows you to connect to one of them.



The dialog is shown if any of the following happen:

- The user clicks the “InterfaceType (LinkName) disconnected from ESSID” notification message (p??)
- A wireless connection is attempted when the user's favorite wireless networks list is empty
- No favorite networks have been found, and the *Show available networks* preference has been set on the Connection Properties, Wireless tab (p??).

The dialog title includes the name of the interface attempting to connection: “Connect: *InterfaceType (LinkName)*”. Wireless networks are listed in descending order of signal strength.

The *Add to favorite networks list* checkbox is shown only if the *Ask before adding any networks to favorites* preference is checked on the Connection Properties, Wireless tab (p??). If it is not checked, the network is not added to your favorites list upon connection. (*This preference not implemented in Phase 1, so the* Ask before adding *checkbox is always shown*.)

If no wireless networks are in range, the list consists of a single entry, “No wireless networks available”.

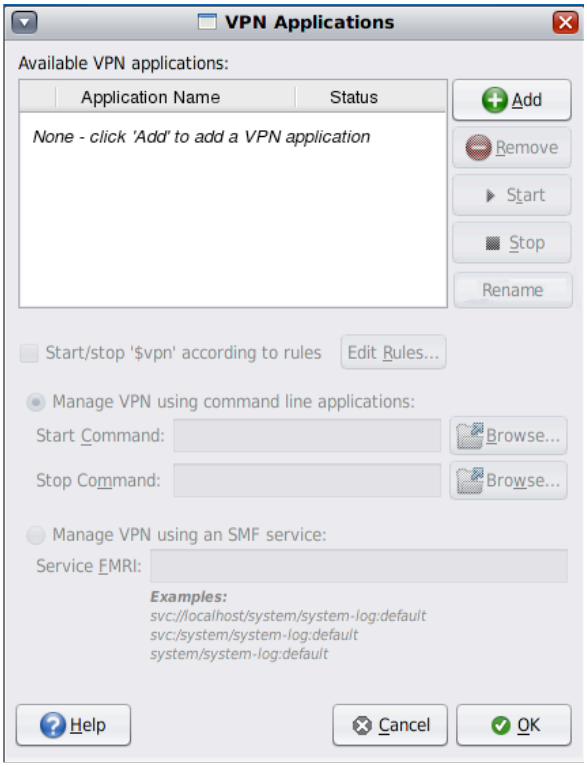
Clicking **Refresh** causes the list of networks to be updated, showing any changes in availability, security or signal strength.

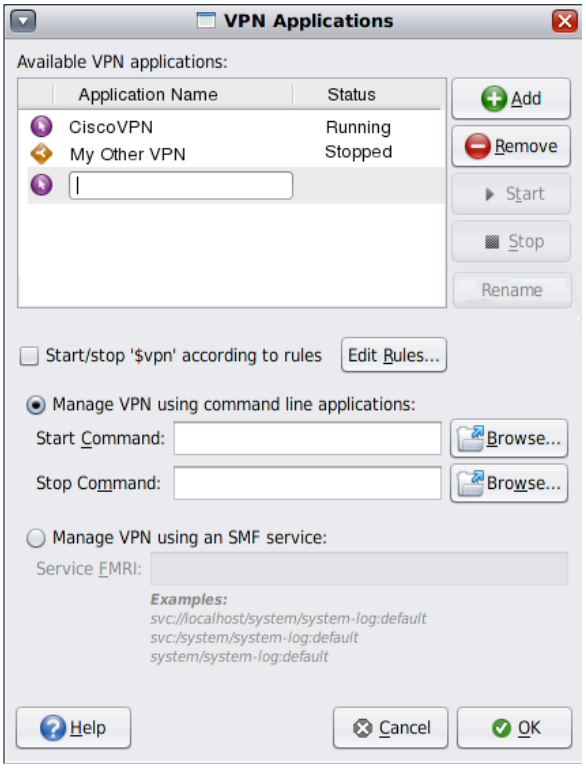
Clicking **Connect** attempts to join the selected network immediately, if no further input is required. Otherwise, the Join Wireless Network dialog (p??) is opened with the network's details pre-filled, to allow input of passwords and other security credentials.

Clicking **Join Unlisted...** is equivalent to selecting *Join Unlisted Wireless Network* from the panel icon context menu (p??). That is, it opens the Join Wireless Network dialog (p??) with no details pre-filled, to allow you to connect to a network that is not broadcasting its ESSID. Once connected to any such network, it appears in the context menu and in the list of favorite and available networks. If the network was not added to the list of favorites when connecting, it will disappear from this list again after the next disconnection.

VPN Application Preferences

This dialog allows you to edit and monitor applications (ENMs) that alter the behaviour of your network connection; typically, applications that start/stop a VPN tunnel.





Open this dialog by clicking the **VPN** button on the Network Preferences, Status View (p??), or the *VPN Applications...* menu item on the panel icon's context menu (p??).

The main part of the dialog is a three column list, which shows, for each application:

- Activation state (manual or conditional)
- User-defined name, e.g. "Cisco VPN"
- Current status, "Running" or "Stopped"

The Start/Stop according to rules checkbox below the list is checked if the selected VPN application has an activation type of Conditional, and unchecked if the type is Manual. You can change the type by toggling the checkbox.

The initial dialog state is shown above left, when no VPN applications have been added. Only the **Add** button is enabled.

Adding a new VPN application

Clicking **Add** switches focus to an embedded text field in the table, where the user can type a name for the new VPN application. At this point:

- Pressing *Enter* or *Tab* adds the new entry (of activation type *Manual* by default), and enables the two *Manage VPN* radio buttons. The first of these radio buttons (*command line applications)* is selected by default.
- Pressing *Esc* cancels the typing and no new application is added.

Adding a command line-controlled VPN application

When the *Manage VPN using command line applications* radio button is selected, the *Start Command* and *Stop Command* text fields, and the two *Browse* buttons are also enabled. The *Service FMRI* field and example text is disabled.

Type the command that starts the VPN process into the *Start Command* text field, or look for it using the **Browse** button, which opens a file chooser dialog. The **Start** button remains disabled for this VPN application until a valid command has been typed into this text field.

Type the command that starts the VPN process into the *Stop Command* text field, or look for it using the **Browse** button, which opens a file chooser dialog. The **Stop** button remains disabled for this VPN application until a valid command has been typed into this text field.

Adding an SMF service as a VPN application

When the *Manage VPN using an SMF service* radio button is selected, the *Service FMRI* field and example text is enabled. The *Start Command* and *Stop Command* text fields, and the two *Browse* buttons are disabled.

Type the FMRI of the VPN service into the text field. The **Start** and **Stop** buttons remain disabled for this VPN application until a valid FMRI has been typed into this text field.

Removing a VPN application

You can remove any (stopped) application from the list by selecting it, then clicking **Remove**. If the selected VPN application is running, the **Remove** button is disabled, and the application must be stopped first.

Renaming a VPN application

To rename a VPN application, double-click its name, or select it and click the **Rename** button. This causes the application name to be replaced by an in-place text field in the list, whose contents are the current name, fully selected. This allows immediate overtyping of a new name. The user can press *Enter* to accept the new name and exit the editing mode, or *Esc* to revert to the previous name and exit the editing mode.

A VPN application can only be renamed if it has been added since the VPN Applications dialog was opened. If an application that existed prior to opening the dialog is selected, an alert is displayed when the **Rename** button is clicked:

Starting and Stopping VPN applications

You can start a VPN application manually by selecting it in the list, then clicking **Start**. The **Start** button is only enabled for Manual VPN applications that are not currently running. *TBD: or should it be possible to select conditional ENMs? Would this attempt to change their type to manual and activate them? See email from mph.*

You can stop a VPN application manually by selecting it in the list, then clicking **Stop**. The **Stop** button is only enabled for Manual VPN applications that are not currently running. *TBD: or should it be possible to select conditional ENMs? Would this attempt to change their type to manual and activate them? See email from mph.*

You can have a VPN application start and stop automatically by setting its activation type to Conditional. You do this by checking the *Start/Stop according to rules* checkbox when the application is selected in the list.

When the box is checked, the **Edit Rules** button is enabled. This button opens a Rule Editing dialog (p??), with the following parameters:

- Condition Text: '*VPN name*' will run while the following conditions are true:
- Match any/all radio buttons: shown
- Conditions: Active connections, Any IP address, Any advertised domain name, Any system domain name, Current location, Running VPN applications, Wireless network name. (See available conditions, p??)