Google Search Appliance

Installing the Google Search Appliance

Google Search Appliance software version 7.2 and later

Google

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Contents

Installation Guide

This guide contains the information you need to install the Google Search Appliance (models GB-7007, GB-9009, G100, and G500) on your network and perform the initial software configuration on the search appliance. This guide also tells you how to set up the first crawl of the content on a web site or intranet.

For information about specific feature limitations, see Specifications and Usage Limits.

For installation information for other software versions and search appliance models, see the Archive page, which contains links to previous versions of the search appliance documentation.

About This Document

This document is for you if you are a network administrator or if you need to install the Google Search Appliance. You need some knowledge of networking and web concepts before you install. If you are not a network administrator, work with your network administrator to ensure that all the requirements described in *Planning for Search Appliance Installation* are met.

About the Google Search Appliance

The Google Search Appliance is a one-stop search and index solution for organizations of all sizes. Using a search appliance, you can quickly deploy search on a web site or intranet. The search appliance comes with Google software installed on powerful hardware, simplifying the planning process because you do not need to choose a hardware platform or go through a complicated software configuration process.

Mount the Google Search Appliance on a rack in a location that meets the temperature and electricity requirements. For complete information on those technical requirements, read the section "Electrical and Other Technical Requirements" in *Planning for Search Appliance Installation*.

Before You Install

Before you install a search appliance, read the installation planning document, *Planning for Search Appliance Installation*. You may have received the planning document as an attachment to the Welcome email you received after purchasing the search appliance. If not, read *Planning for Search Appliance Installation*. If you have read the planning document and collected the information described in the preinstallation checklists, you can proceed to install the Google Search Appliance.

You need a computer that is physically close to the search appliance and can be attached to the search appliance with an Ethernet cable. The computer should run a supported web browser. For a list of supported browsers, see the release notes for the software version that is running on the search appliance.

About Technical Support

Google provides technical support through a web application at the for Work Technical Support portal. The Google for Work Support Information web page (https://support.google.com/googleforwork/answer/142244#search) has information on how to connect to the Support portal.

You can also find useful information in the user forums on Google Groups for the Google Search Appliance (http://groups.google.com/group/Google-Search-Appliance).

About the Google for Work Technical Support Web Site

The Google for Work Technical Support web site provides the following information and services for all models of the Google Search Appliance:

- Bulletins, advisories, and other time-critical information

- Update instructions, release notes, and patches

- The Technical Support Service Guidelines

Technical Support Requirements

Under the terms of the Technical Support Agreements for the Google Search Appliance, Google for Work Technical Support requires direct access to your search appliance to provide some types of support. For example, technical support engineers require direct access to determine whether a search appliance that is experiencing problems is eligible to be returned to Google and exchanged for a new search appliance. Different access methods have different requirements. The requirements for remote access are discussed in *Remote access methods for technical support* (http://support.google.com/gsa/answer/2644822).

After you create a technical support account, review the terms of the Technical Support Guidelines for your search appliance (https://support.google.com/gsa/answer/3246290).

Installing the Google Search Appliance

This section contains instructions for connecting the Google Search Appliance to the network and performing the initial software configuration. Before you connect the search appliance, complete the preinstallation checklists, which are in *Planning for Search Appliance Installation*.

Installing the Google Search Appliance has two phases:

1. "Connecting the Search Appliance to the Network" on page 6

2. "Configuring the Network Settings" on page 8

When you configure the software, you set network parameters so that the search appliance can communicate with the network and other computers on the network. After you configure the software, set up the initial crawl of the content. When the crawl and index processes are completed, the search appliance can begin serving content to end users.

The Welcome letter that is in the box with the Google Search Appliance also contains instructions for connecting the search appliance to the network and starting the search appliance. If you have already connected the search appliance to the network, you can skip to "Configuring the Network Settings" on page 8 and continue configuring the software.

Connecting the Search Appliance to the Network

The installation process begins by connecting the search appliance to your network. Ensure that you have a laptop computer or desktop computer available that is located near the search appliance.

A Google Search Appliance has four Ethernet ports and they might be labeled LAN1 through LAN4.

- The primary port is yellow and connects the search appliance to your network for day-to-day operations. If the ports are labeled, this is LAN1.

- The white port enables the dedicated administrative network interface card. If the ports are labeled, this is LAN2. You can optionally enable this port during the network configuration process as a dedicated port for search appliance administration. To use the dedicated NIC on a search appliance where policy ACLs are configured, you must have some form of user authentication enabled. Otherwise, content from the URLs protected by policy ACLs is not served. You must also assign an IP address, a subnet mask, and a gateway to the network interface card.

- The orange port connects the search appliance to a local computer when you need physical access to configure the software. Do not connect it to anything else at any time. If the ports are labeled, this is LAN3.

- The blue port is not used. If the ports are labeled, this is LAN4.

All search appliances are shipped with two Ethernet cables and two power cables localized for your region. One Ethernet cable is yellow and the other is orange. The orange cable is considerably shorter than the yellow cable.

The required network configuration parameters, such as the IP address assigned to the search appliance, can be changed only from a computer that has physical access to the search appliance. Network access is insufficient for changing these parameters.

The following diagram illustrates the connections between a search appliance, the network, and the computer used for configuring the search appliance:

1. Network router connected to search appliance by the yellow Ethernet cable, which is the longer of the two cables supplied with the search appliance.

2. Google Search Appliance

3. Laptop connected to search appliance by the orange cable, which is the shorter of the two cables supplied with the search appliance.

Note that the Google Search Appliance is provided with two power supplies and two power cables. Ensure that the search appliance is connected to an uninterruptible power supply (UPS) to ensure that the power source is clean and the search appliance has continuing power during a power failure.

You can optionally attach a monitor directly to the search appliance. The search appliance displays messages on the monitor indicating the progress of the start-up process and when the process is complete.

To connect the Google Search Appliance to the network:

1. Make sure that you have a laptop or desktop computer available that is near the search appliance. You access the search appliance and run the configuration software from this computer.

2. In a location that meets the electrical, temperature, and cooling requirements for the search appliance, mount the search appliance on a rack.

3. Connect the power cords to the search appliance and an uninterruptible power supply.

4. On the search appliance, press the power button once.

   The power button changes color and the search appliance starts. The search appliance typically takes approximately 10 minutes to load the software, but the process can take up to 20 minutes. If a monitor is directly attached to the search appliance, the search appliance displays a login prompt when the start-up process is complete.

5. Connect one end of the yellow Ethernet cable to the yellow Ethernet port on the back of the search appliance.

6. Connect the other end of the yellow cable to a router.

7. Connect one end of the orange Ethernet cable to the orange Ethernet port on the back of the search appliance.

8. Connect the other end of the orange cable to the local laptop or desktop computer.

   The search appliance assigns the IP address **192.168.255.254** and subnet mask **255.255.255.0** to the computer connected to the search appliance. Most computers use dynamic host configuration protocol (DHCP) to obtain IP addresses. If your computer does not use DHCP to obtain IP addresses, you must manually assign the computer's static IP address and subnet mask to these values, or temporarily change your computer's network setting to allow use of DHCP to get IP addresses. For more information on enabling DHCP or manually setting IP addresses, see the help system or other documentation for your computer.

9. If the IP address and subnet mask are not assigned to the computer, wait approximately ten minutes, reboot the computer and recheck the IP address and subnet mask.

10. To enable the dedicated administrative network interface card, connect one end of an Ethernet cable to the white Ethernet port (LAN2) on the back of the search appliance and connect the other end to a router.

Continue to the next section, "Configuring the Network Settings" on page 8, and proceed with the instructions there.

First-Time Startup of Older Models of the Google Search Appliance

This section only applies to older search appliance models GB-7007 (T2-T3 series) and GB-9009 (U1-U2 series), but not to newer models G100 (T4) or G500 (U3).

The first time you start a Google Search Appliance, you may see an error message saying

```
The battery has recovered, but cached data was lost.
Press any key to continue or 'C' to load the configuration utility.
```

The error message indicates that the power has drained from a rechargeable battery for the RAID controller. The Google Search Appliance has not lost data and will function normally. The battery recharges in the 24 hours after the Google Search Appliance is powered up. So allow GSA to run for a few more hours, and then press any key to continue the boot.

Configuring the Network Settings

This section provides instructions for configuring the search appliance software so that the Google Search Appliance can connect to your network and communicate with the other computers located on the network. To configure the search appliance, you need the values described in the preinstallation checklists that are in *Planning for Search Appliance Installation*.

When you perform these steps, you run the **Network and System Settings** wizard from the computer that you connected to the search appliance. If the web browser on the computer uses a proxy to connect to the Internet, disable the proxy, which prevents access to the search appliance.

You can use these instructions after you initially configure the search appliance to change the search appliance's network settings. When you change any network settings, only those settings are affected. The index is not reset or otherwise affected by the changes. You do not need to have the search appliance recrawl the content after changing the network settings.

To configure the search appliance software:

1. On the computer that is connected to the search appliance, start a web browser.

    Use a version of Google Chrome, Internet Explorer, or Firefox that is supported for the software version running on your search appliance.

2. In the browser address bar, enter the following URL:

    ```
    http://192.168.255.1:1111/
    ```

    The Network and System Settings wizard starts. It may take a few minutes before the wizard appears.

3. If the Network and System Settings wizard does not start, check the browser proxy settings. If the browser is using a proxy, disable the proxy, wait two minutes, and enter **http://192.168.255.1:1111/** in the browser address bar again.

   When the wizard starts, the first page you see is the **End User License Agreement** page.

4. Select your country from the drop-down list.

   The End User License Agreement is displayed, in the language corresponding to the country you chose.

5. Read the agreement and optionally make a copy of it.

   Google recommends that you copy the license agreement. After you accept the agreement and complete the installation, you cannot view the license agreement.

6. Click **Accept & Continue to Step 1**.

   - If you do not accept the license agreement, the wizard exits and you cannot configure the search appliance.
   - If you accept the license agreement, you see the **Network Settings** page of the Network and System Settings wizard.

7. Configure network settings. Both IPv4 and IPv6 configurations are valid and you can have both types of configurations simultaneously.

   a. Define a particular network speed and duplex setting for the network interface card by clicking the appropriate radio button in the **Network Speed** section. By default, the search appliance autonegotiates network speed and the duplex setting with your network.

   For an IPv4 configuration

   b. In the **IP Address** field, enter the IP address assigned to the search appliance.
   c. Edit the **Subnet Mask** field so that it matches the value on the completed preinstallation checklist. If the field contains a value, the search appliance obtained the value using DHCP.
   d. Edit the **Default Gateway** field so that it matches the value on the completed preinstallation checklist. If the field contains a value, the search appliance obtained the value using DHCP.

   For an IPv6 configuration, to enable the search appliance to retrieve IPv6 settings automatically, click **Auto Configuration** and leave the other IPv6 settings blank. To configure IPv6 settings manually:

   e. In the **IP Address** field, enter the IP address assigned to the search appliance.
   f. In the **Prefix Length** field, specify the length of the address prefix used for search appliance administration.
   g. Edit the **Default Gateway** field so that it matches the value on the completed preinstallation checklist. If the field contains a value, the search appliance obtained the value using DHCP.

8. To use the dedicated port (white label) for search appliance administration, check **Dedicated Admin NIC** and complete the following steps. The Admin NIC is IPv4 only.

   a. Define a particular network speed and duplex setting for the dedicated network interface card by clicking the appropriate radio button in the **Network Speed** section. By default, the search appliance autonegotiates network speed and the duplex setting with your network.
   b. In the **IP address field**, enter the IP address to use for search appliance administration.
   c. In the **Subnet mask** field, enter the subnet mask for search appliance administration.
   d. In the **Gateway** field, enter the gateway to be used for outbound search appliance administration traffic.

9. In the **DNS Servers** field, enter a comma-separated list of Domain Name System (DNS) servers.

10. In the **DNS Suffix** field, enter a comma-separate list of suffixes for DNS resolution.

    For example:

    ```
    products.example.com,
    mydivision.example.com,
    support.example.com
    ```

    WARNING: If the GSA is unable to contact the DNS Server, perhaps if the yellow Ethernet port is not connected to a network, then do not enter a hostname in the SMTP and NTP fields. Enter an IP address instead (this IP address can be incorrect for the time being). Once you have finished setting up the GSA, you can modify the SMTP and NTP Servers in the Admin Console to point to the correct servers. If you do not do this and later notice a "(Error -- see logs for traceback)" message, contact Google for Work Support.

11. In the **SMTP Server** field, enter the name of a Simple Mail Transfer Protocol (SMTP) server, which the search appliance needs for sending notifications and alerts.

12. In the **Sender of Outgoing Email** field, enter a name for the account that sends email messages and alerts from the search appliance.

13. In the **Time Zone** field, select the time zone to use for times recorded in logs, for host load scheduling, and for other time-based information.

14. In the **NTP Servers** field, enter a comma-separated list of IP addresses of Network Time Protocol (NTP) servers.

    It is crucial to list at least one NTP server in this field. Google recommends that you list three. For more information, see "Required Values" in *Planning for Search Appliance Installation*.

15. In the **Password** field, enter a new password for the admin account, then retype the password to confirm it.

    The admin account is the default administration account for the search appliance. The password is case-sensitive. Record the information in a safe place.

16. In the **Email Address** field, enter the email address to which the search appliance sends notices intended for the admin account.

17. Select the way you want administrator and manager accounts to be authenticated on the Admin Console.

    • If you select **Local Authentication**, administrators and managers are authenticated using credentials you enter directly on the Admin Console.

    • If you select **LDAP Authentication**, administrators and managers are authenticated against an LDAP server. To use this option, you must initially connect to the Admin Console using the credentials you entered in step 15, then configure the LDAP administrator group and server. After you save the LDAP configuration, LDAP authentication for administrators and managers takes effect.

    • If you select **Local and LDAP** authentication, the search appliance attempts to authenticate administrators and managers against both the local credentials and the LDAP server. If an account can be authenticated against either the local credentials or the LDAP server, the login attempt succeeds.

    Note that Version Manager uses local authentication only. You must use the admin account for access to Version Manager.

18. Click **Continue.**

19. In the **Test URLs** field, enter one URL per line, representing locations of content you want crawled and indexed.

    Use a trailing slash on each URL. For example:

    ```
    http://corp.example.com/
    http://www.example.com/products/
    ```

20. Click **Check Access to Web Servers**.

    The search appliance attempts to crawl the content files. If the search appliance cannot reach any of the locations, error messages appear in the configuration wizard interface.

    You see a message saying the following:

    ```
    Congratulations! You have configured the appliance. If no warnings or errors
    have been displayed, you can now disconnect your laptop and use the appliance.
    Use the Admin Console application for day-to-day administration.
    ```

    The configuration values are listed. You can disconnect the local computer or make further changes to the settings. To change a value, click the **Edit Settings** link.

Determining Whether the Software Version is Current

The software preinstalled on your Google Search Appliance might not be the most recent version. After you configure the search appliance, Google recommends that you check the software version on the search appliance, then visit the Support site to check for updates.

To determine the version of the software current installed on your search appliance, click the **About** link on any Admin Console page. You see a new page that displays the search appliance version.

Visit the following URL for instructions on how to log in to the Support portal:

   https://support.google.com/enterprisehelp/answer/1120726

When you visit the Support portal, navigate to the page that lists supported software versions, then determine which is the most recent version and the proper update path to follow.

The next section, "Setting Up the Crawl" on page 11, contains instructions for connecting to the Admin Console and configuring the initial crawl of your content.

Setting Up the Crawl

Crawl is the process by which the Google Search Appliance locates content to be indexed. You define the start URLs to be crawled, URLs that are crawled or excluded from the crawl, and file types to include or exclude.

When you complete the process described in "Configuring the Network Settings" on page 8, the crawl is not started. This section contains instructions for connecting to the Admin Console, entering start URLs and URL patterns, starting the crawl process, and confirming that the crawl is proceeding normally. For complete information on crawl, start URLs, and URL patterns, see *Administering Crawl*.

To obtain context-sensitive help from any page in the Admin Console, click the Help link. You can also view help pages when you click the Help Center link in the horizontal blue bar in the upper right of the screen.

The high-level steps for setting up the initial crawl are:

1. "Logging in to the Admin Console" on page 12

2. "Setting Up and Starting the Crawl" on page 13

3. "Checking the Crawl Status" on page 13

4. "Checking the Serving Status" on page 14

Logging in to the Admin Console

The Admin Console is an application accessed with a web browser that provides the user interface for administering the Google Search Appliance.

You can log in to the Admin Console using HTTP or HTTPS:

• For a secure connection, use HTTPS on port 8443.

 Using HTTPS provides better protection for passwords and other information.

• For an insecure connection, use HTTP on port 8000.

 Using HTTP increase the risk of exposing passwords and other information to users on the network who are not authorized to see such information.

It's best to use HTTPS on port 8443.

To retain changes you make on any Admin Console page, click the **Save** button. If you navigate to another page without clicking **Save**, your changes are lost.

To log in to the Admin Console:

1. Start a browser on any computer connected to your network.

2. Type the Admin Console URL in the browser address bar.

    • For secure access, type `https://hostname:8443/` or `https://IP_address:8443/`, where `hostname` is the host name assigned to the search appliance or `IP_address` is the IP address assigned to the search appliance.

    • For insecure access, type `http://hostname:8000/` or `https://IP_address:8000/`, where `hostname` is the host name assigned to the search appliance or `IP_address` is the IP address assigned to the search appliance.

3. When the Admin Console login page appears, type **admin** in the user name field and type the password you assigned to the admin account during configuration in the password field.

After you log in to the Admin Console, you can configure crawling or perform other administrative tasks. If you cannot log in to the Admin Console, refer to "Troubleshooting" on page 17, search the search appliance documentation on code.google.com, or contact Google for Work Technical Support (https://support.google.com/googleforwork/answer/142244#search) for additional troubleshooting information.

The next section, "Setting Up and Starting the Crawl" on page 13, discusses how to configure the initial crawl of your content files. For more information on crawl and configuring crawl, see *Administering Crawl*.

Setting Up and Starting the Crawl

To set up and start the crawl:

1. In the left-hand menu, click **Content Sources > Web Crawl > Start and Block URLs**.

2. In the **Start URLs** field, type one or more start URLs.

   For the initial setup and testing, it is best to enter a start URL that does not require a login or user authentication. Start URLs must be fully qualified URLs, in the following format:

       protocol://host[:port]/[path]/

   For example, `http://dracula:2346/content`. The information in the square brackets is optional.

3. In the **Follow Patterns** field, copy all start URLs from the **Start URLs** field.

   If you enter the URL pattern for a directory, the URL must terminate in a forward slash (/). Use only the server part of the URL. If a URL refers to a specific page, only that page is crawled. For more information on URL patterns, click the Help link or see *Administering Crawl*.

4. In the **Do Not Follow Patterns** field, scroll through the list of patterns that can be blocked from being crawled.

   Many file formats are excluded from the crawl by default, including common graphic formats such as .jpg. If you want a particular format crawled, remove the format from the list or comment the format out using the comment symbol (#). If you do not want a particular document type to be crawled, remove the comment symbol from the corresponding pattern. For example, if you do not want any Microsoft Word files (.doc) crawled, remove the # sign that is in front of ".doc$" and no .doc files will be crawled. You can also add specific URL patterns to this area to prevent the URLs that match the patterns from being crawled.

5. Click **Save**.

6. In the left-hand menu, click **Content Sources > Diagnostics > Crawl Status**.

7. Click **Resume Crawl**.

   The search appliance starts to crawl the URLs according to the URL patterns you entered. When the search appliance software is crawling content, the graphic on the page shows multicolored balls in motion. You do not have to pause the crawl before making changes on the **Crawl URLs** page.

Checking the Crawl Status

You can check the progress of the crawl from the **Home** page.

To check the crawl status:

1. In the side menu, click **Home**.

   The Home page is displayed, showing the Crawl Status graph. The graph automatically refreshes to show crawling activity. If the page does not refresh automatically, click any link, and then return to this page. You can also click the browser's Refresh button.

2. Click the "click to expand" link under the Crawl Status graph to go to the Crawl Status page.

   The Crawl Status page shows:

   - URLs found that match crawl patterns
   - Total number of documents being served from the index
   - Current crawling rate
   - Document bytes filtered
   - Documents crawled in the previous 24 hours
   - Document errors in the previous 24 hours
   - Whether the crawling system is paused or running. When the multicolored balls are moving, the crawling system is running.
   - Crawl status in the previous 24 hours by URLs found or crawled each hour of 24-hour time

   The Crawl Status page does not show:

   - URLs that had errors
   - URLs that were excluded by Do Not Follow patterns
   - URLs that were excluded by a robots.txt file

Checking the Serving Status

The **Search > Diagnostics > Search Status** page reports on search results serving. The graph shows a summary of queries per second by the half hour. If the crawl has just begun, there is a delay before the **Search Status** page shows any activity.

After the Installation Process is Completed

After the installation process is finished, perform the following tasks:

- "Recording the Appliance ID" on page 14

- "Running Test Queries Using the Test Center" on page 15

- "Providing a Search Page to Your Users" on page 15

- "Exporting the Search Appliance Configuration" on page 15

Recording the Appliance ID

After you complete the installation process, record the identification number of the search appliance, which is useful in troubleshooting if the search appliance experiences any problems. You can find the appliance ID in the following locations:

- On the label on the back of the search appliance

- On the Admin Console on the **Administration > License** page

- On the Google for Work Technical Support web site, if you log in with the credentials used for your Technical Support account

Running Test Queries Using the Test Center

Run test queries in these circumstances:

- When the index is new

- You created or changed a front end

- You created or changed a collection

To run test queries:

1. Click the **Test Center** link in the horizontal blue bar at the top right of the page.

   A new browser window opens.

2. Enter some test queries.

3. When you finish testing, close the Test Center browser window.

Providing a Search Page to Your Users

After the index is created and tested, your users need a search page for access to the index. There are two ways to do this:

- Provide a link to the search appliance's internal search page

- Create an HTML search form on your web site

Both techniques are discussed in "Customizing the User Interface" in *Creating the Search Experience*.

Exporting the Search Appliance Configuration

The Google Search Appliance saves configuration information internally. To back up this information, you can export it to a file. After a failure, or to revert your configuration, you can import the file back into the search appliance. It's best to export the search appliance configuration on a regular basis, as well as any time you change the configuration.

To export the search appliance configuration information:

1. Click **Administration > Import/Export**.

2. Enter a password.

   If you need to import the configuration information, you must also provide the password at import time.

3. Confirm the password.

4. Click **Export**.

5. On the local computer, browse to a location for the file and click **Save**.

Starting and Shutting Down the Google Search Appliance

Use the instructions below to start or shut down the search appliance.

Starting the Search Appliance

This section contains instructions for starting the Google Search Appliance.

To start the search appliance:

1. Plug the power cord into the Google Search Appliance.

2. On the front of the search appliance, locate the power button.

3. Press the power button once.

   The indicator light next to the power button changes color.

The search appliance typically takes about ten minutes to initialize and run system checks, but this can take as much as twenty to thirty minutes.

If the search appliance was shut down improperly, the next initialization takes longer because the process includes disk verification and repair.

See the instructions in "Shutting Down the Search Appliance" on page 16 for information on shutting down the search appliance safely.

Shutting Down the Search Appliance

This section contains instructions for safely shutting down the Google Search Appliance.

You must perform a safe shut down before you unplug the power cord. Do *not* shut down a running search appliance by unplugging it or by depressing the power button for four seconds or more. Use one of the methods described in this section.

If the search appliance is in use, tell your users that search will be off line before you shut down the search appliance. For more details about shutdown, see the Admin Console's online help system.

Shutting Down the Search Appliance Normally

The following two methods are the preferred ways to shut down the search appliance.

To shut the search appliance down normally when you have network access:

1. On a computer that is attached to the network, start a browser.

2. Navigate to the Admin Console and log in.

3. Click **Administration > Shutdown**.

4. Click the button **Shut the System Down Now**.

To shut the search appliance down normally when you have physical access:

1. Press the power button once, briefly.

   The shut-down process typically takes one to two minutes, but the process can take up to ten minutes.

   When you press the power button, do not hold it down. Depressing the power button for four (4) seconds starts a hard shutdown, which can cause data loss and require a long period of system checks when the search appliance restarts.

2. When the indicator light is no longer illuminated, you can unplug the search appliance.

Rebooting the Search Appliance

Use the following instructions to reboot the search appliance from the Admin Console or from a physical or virtual keyboard.

To reboot the search appliance from the Admin Console:

1. On a computer that is attached to the network, start a browser.

2. Navigate to the Admin Console and log in.

3. Click **Administration > Shutdown**.

4. Click the button **Reboot the System Now**. The system reboots.

To reboot the search appliance from a physical or virtual keyboard:

1. Connect a keyboard and a monitor to the appliance. For information about the type of keyboard to use with your search appliance model, see *Planning for Search Appliance Installation*.

2. On the keyboard, press the **Ctrl, Alt**, and **Delete** keys simultaneously. The search appliance reboots.

3. Wait at least 20 minutes for the search appliance to resume operations.

4. If the appliance does not come back up after an hour, connect a monitor and keyboard to the appliance to view the status. If you have a large index or a large number of documents that are crawled, it can take the appliance more than an hour to boot up. If necessary, reboot again by pressing the **Ctrl, Alt**, and **Delete** keys.

Troubleshooting

This section contains information on the following topics:

- "Resolving Installation and Configuration Problems" on page 18

- "Network-Related Error Messages" on page 20

If you encounter any difficulties or technical problems while installing the Google Search Appliance, follow these steps:

1. If the problem occurred during installation or configuration, read "Resolving Installation and Configuration Problems" on page 18.

2. If the problem occurred while you configured the initial crawl, read *Administering Crawl* for Web and File System Content and the help system in the Admin Console.

3. If you cannot find the solution to your problem in this document, *Administering Crawl* for Web and File System Content, or the help system in the Admin Console, see *Fix a problem* (https://support.google.com/gsa/topic/2707842).

4. If you cannot resolve the problem and you have access to the Technical Support web site, review the information at https://support.google.com/enterprisehelp/answer/1120726, which directs you to the Support Portal.

5. Contact your technical support provider, which might be Google Technical Support or might be a reseller, depending on how you obtained your search appliance.

In some circumstances, your technical support provider may ask you to attach a USB keyboard and monitor directly to the search appliance so that you can manually restart the search appliance.

The appliance ID (also known as the serial number) is on a tag on the back of the chassis and can also be found on the Admin Console on the **Administration > License** page.

Resolving Installation and Configuration Problems

The following table contains information on how to fix problems you might encounter during installation or configuration.

Problem	Solution
The search appliance starts and you connect a computer to the search appliance. The computer is not assigned the IP address 192.168.255.254.	1. Restart the computer and recheck the IP address of the computer. 2. Ensure that the search appliance is running and that its lights are green. 3. Ensure that the cables between the computer, the search appliance, and your network are properly connected. 4. Ensure that the computer uses DHCP to obtain an IP address. 5. If the computer does not use DHCP, manually assign the correct IP address to the computer. 6. Try a different computer.

Problem	Solution

You start a browser on the computer connected to the search appliance. You cannot connect to the Network and System Settings wizard at http://192.168.255.1:1111/	1. If the browser is using a proxy, disable the proxy and any personal firewall software running on the computer. Wait two minutes and then try to connect to the Network and System Settings wizard.
	
	2. Symantec antivirus software is sometimes configured to block port 1111. If you have Symantec AntiVirus, Symantec Firewall, or both programs installed on your computer, check whether port 1111 is blocked.
	
	3. If you are using Internet Explorer and the browser is timing out waiting for the Network and System Settings Wizard, try a different browser.
	
	4. If ICMP is enabled on your network, try using the ping command to contact the search appliance. From the command line, type:
	
	`ping 192.168.255.1`
	
	5. If ICMP is enabled on your network, try using the ping command to contact localhost. If the ping succeeds, you have a TCP/IP connection and ping is working.
	
	`ping 127.0.0.1`
	
	6. If you cannot ping the search appliance, contact your network administrator.

You type a URL in the Test URLs box in the configuration wizard and you see the error message **URLs to Test: connection refused** appears.	The server located at the test URL is not running a web server.
You type a URL in the Test URLs box in the configuration wizard and you see the error message **URLs to Test: not a valid URL** appears.	The URL does not include the protocol, the domain name, or additional path information. For example, `http://www.google.com/` is a valid URL, but `http://www.google.com` is not valid because it does not include path information (the final slash "/").
You type a URL in the URLS to Test box and you see the error message **URLs to Test: connection timed out** appears.	The server that you identified might have an access control list (ACL) that is blocking access.
On the DNS Settings page, you see the message **DNS: connection refused: server down** when you click Continue and attempt to navigate to the next page.	The server that you identified does not run the DNS service. The server cannot respond to a DNS request from the search appliance.

Network-Related Error Messages

This table lists common errors in network configurations that might cause the setup to fail. You might need to ask a system administrator for help.

Error Message	Description	Solution
Gateway unpingable	This typically means that the gateway or IP or netmask values were entered incorrectly during the initial software configuration for the search appliance.	Ensure that the correct values are entered on the configuration screens. Consult your system administrators to verify the correct values.
Cannot ping the DNS, NTP, mail, or content server.	The message is displayed on the configuration screen and indicates which type of server is unpingable. The message can apply to a DNS server, NTP server, content server, or mail server. You are encountering one of these problems: • You specified the wrong hostname or IP address • The server is down • The server is protected by a router policy or a firewall.	Ensure that the hostname or IP address is correct. Ensure that the DNS, NTP, mail, or content server is running and start the server if it is not running. Ensure that the network or router policies allow the search appliance access to the server.
DNS: connection timed out	The search appliance established a connection to the DNS server, but the connection timed out. The DNS server is busy or network traffic is interfering with the connection.	Increase the capacity of the DNS server and monitor network traffic to correct any traffic problems.
Cannot resolve server (SMTP, SYSLOG, NTP servers, test URLs)	The hostname you specified is not known to the DNS servers.	Ensure that you entered the server name correctly and correct any typographical errors.
Unable to contact NTP server	The search appliance cannot contact the NTP server.	Ensure that you correctly identify an NTP server on the configuration screens and that the NTP server is running. Review the network configuration and any firewalls to ensure that they do not block network traffic to and from the search appliance. Do not attempt to operate the search appliance without identifying at least one NTP server.

Error Message	Description	Solution
Mail: connection refused	The search appliance cannot contact the SMTP server.	Ensure that you correctly identify an SMTP mail server on the configuration screens and that the SMTP server is running. Review the network configuration and any firewalls to ensure that they do not block network traffic to and from the search appliance.
URLs to Test: returns code *nnn* instead of 200, where *n*=any numeral	The web server specified responded, but returned an error code. Common error codes: • **401**—user authentication required • **403**—forbidden • **404**—document not found	The URLs to Test section is to establish that the connectivity functions of the search appliance are working correctly. Use URLs to content that the search appliance can access without presenting credentials for authentication or authorization.

Note: A complete list of HTTP error codes is available from http://www.ietf.org/rfc/rfc2616.txt, on pages 39 and 40.

Notices

This section contains safety and other notices.

Safety Notice

Read and follow all instructions marked on the product and in the documentation before you operate the search appliance.

Retain all safety and operating instructions for future use.

The product should be operated only from the type of power source indicated on the rating label.

If your computer has a voltage selector switch, make sure that the switch is in the proper position for your area. The voltage selector switch is set at the factory to the correct voltage.

The plug-socket combination must be accessible at all times because it serves as the main disconnecting device.

This product is shipped with a three-wire electrical grounding-type plug that fits only into a grounding-type power outlet. This is a safety feature. The equipment grounding should be in accordance with local and national electrical codes. The equipment operates safely when it is used in accordance with its marked electrical ratings and product usage instructions.

Do not use this product near water or a heat source.

Set up the system on a stable work surface so as to ensure stability of the system.

Openings in the case are provided for ventilation. Do not block or cover these openings. Make sure you provide adequate space around the system for ventilation when you set up your work area.

Never insert objects of any kind into the ventilation openings.

To avoid electrical shock, never attempt to remove the covers of the Google Search Appliance.

Always shut down the Google Search Appliance from the Admin Console before powering down the hardware.

If you are working with the modem or local area network:

Do not connect or use a modem or telephone during a lightning storm. There may be a risk of electrical shock from lightning.

To reduce the risk of fire, only use No. 26 AQG or larger telecommunications line cord.

Do not plug a modem or telephone cable into the network interface controller receptacle (NIC).

The device should be plugged into an uninterruptible power supply to make sure that the power source is clean and that the Google Search Appliance is powered in case of a power outage.

WARNING: Never disconnect the power cord while the search appliance is running. Shut the search appliance down from the **System Shutdown** page (in the Admin Console's Main page) before disconnecting the power cord. Last, to remove all power from the unit, disconnect the power cord.

Search Appliance Security and Resilience

Anti-Hacking Measures

All services within the Google Search Appliance sit behind a firewall. The firewall is the main source of security for the device against malicious hackers. No communication can connect to or connect from these servers without first going through the firewall. The firewall allows only a small set of ports to pass into the system. For a complete list of the port numbers and their functions, see "What Ports Does the Search Appliance Use?" in *Planning for Search Appliance Installation*.

Lockdown Security

The key to the bezel is supplied with search appliances GB-7007 and GB-9009, which you may unlock only while installing the appliance in a racking system or replacing a hard drive. Do not attempt to open the case of any other search appliance model.

Compliance Notice

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful Interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not Installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Copyrights

This product includes Python software version 1.5.2, developed by Stichting Mathematisch Centrum.

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This product includes timeoutsocket.py

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