4. If you prepared a SAS host (as described in 5.3, “Preparing the host operating system” on page 219), the WWPNs that you recorded in this section appear. If they do not appear in the list, verify that you completed all of the required steps and check your cabling. Then, click **Rescan** in the configuration wizard. Ensure that the ends of the SAS cables are aligned correctly.

   Note: You can enter WWPNs manually. However, if these WWPNs are not visible to the IBM Storwize V5000, the host object appears as offline and it is unusable for I/O operations until the ports are visible.

5. Under the **Optional Fields** section, you can set host type, the I/O groups that your host can access, and the host cluster the host belongs if it is defined.

   Important: Host objects must belong to the same I/O groups as the volumes that you want to map. Otherwise, the volumes are not visible to the host.

   The IBM Storwize V5000 supports a maximum of four nodes per system. These nodes are arranged as two I/O groups per cluster. Because of the host object limit per I/O group, for maximum host connectivity, it is best to create hosts that use single I/O groups.

   You can choose the host type. If you use HP/UX, OpenVMS, or TPGS, you must configure the host. Otherwise, the default option (`Generic`) is acceptable.

6. Click **Add Host** and a task completion window opens.
7. Click **Close** to return to the host view, which now lists your newly created host object, as shown in Figure 5-69.

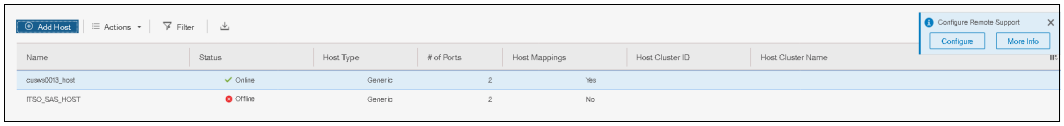

Figure 5-69 Hosts view lists the newly created host object

8. Repeat these steps for all of your SAS hosts.

After all of the host objects are created, see Chapter 6, “Volume configuration” on page 309 to create volumes and map them to the hosts.

5.6 Host Clusters

IBM Spectrum Virtualize software supports host clusters starting with version 7.7.1. A *host cluster* is a group of logical host objects that can be managed together. For example, you can create a volume mapping that is shared by every host in the host cluster. The systems use internal protocols to manage access to the volumes and ensure consistency of the data. Host objects that represent hosts can be grouped in a host cluster and share access to volumes.

Volume mappings can either be shared or private:

- Shared mappings are volume mappings that are shared among all the hosts that are in a host cluster. When a host cluster is created, any common volume mappings become shared among all the hosts within the host cluster.