What is Consul and why is it useful?

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Consul (https://www.consul.io/intro/index.html) is an open-source service-discovery and monitoring tool from HashiCorp. At a bare minimum, you need to install one Consul cluster "server", and then other nodes can join as "clients". Of course, for production, multiple "servers" would be best. Consul can run as a Docker container for simple installation. There are several reasons why Consul is a great tool for Synergy. Here are a few:

Reason #1
A Synergy node has just been provisioned (via Python SDK or HashiCorp Terraform) and the OS Plan Scripts will take care of personalizing the operating system. But how do you know when the node is alive and on the network? Create a Plan Script that will install Consul agent onto the node and configure the node to join the Consul cluster as a "client". Back on the Consul "server", type "consul members" to see which clients have checked in. Once the node has been provisioned and has network connectivity, the Plan Script should run and the "client" will appear in the Consul members list, along with its availability status and IP address. You can now access the node by IP.

Reason #2
Password-less login with SSH keys and/or installation of apps that require API keys. Consul members can store and retrieve key/value pairs. Once the Consul agent is installed, SSH public keys and other app API keys can be retrieved from the key/value store by the Plan Scripts and placed on the node.

Reason #3:
Consul can be combined with other HashiCorp tools, such as Nomad (https://www.nomadproject.io/intro/index.html) to run scheduled workloads on certain types of cluster nodes. For example, a node can register with Consul that it is capable of running Docker, or another node can register that it is an OpenStack compute node. Nomad can then run appropriate tasks on those nodes.