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Getting Started with Capacity Planner

*Getting Started with Capacity Planner 2.8* introduces VMware® Capacity Planner and provides initial steps to get you started.

**Intended Audience**

This information is intended for technical VMware personnel, such as consultants, the Professional Services Organization, Training, Technical Support, and VMware partners who are responsible for installing and using Capacity Planner in assessment engagements.

**VMware Capacity Planner Documentation**

The complete documentation set for VMware Capacity Planner consists of the following documents:

- *Getting Started with Capacity Planner 2.8*. Introduces you to Capacity Planner and provides some initial steps to get you started.

- *Capacity Planner 2.8 Installation Guide*. Explains preinstallation preparation and planning, installation requirements, installing, initial setup and configuration, and uninstalling.

- *Capacity Planner 2.8 Troubleshooting Guide*. Describes common issues that might occur, such as problems with connectivity, discovery, or data collection, and tips for fixing the problem.


- *Capacity Planner 2.8 Release Notes*. Contains descriptions of known issues and workarounds.

- Capacity Planner online help. Information to help you complete a task.
Capacity Planner Overview

Capacity Planner is a capacity planning tool that provides integrated analysis, planning, and decision support functionality.

Using Capacity Planner, you can assess your capacity planning needs, consider implementing virtualization, and run consolidation assessments. These assessments help to virtualize and consolidate data center infrastructure, redeploy strategic IT assets, and optimize workload capacity.

Capacity planning includes the following tasks.

- Balancing workloads on existing computers
- Consolidating work so that fewer computers are needed to perform tasks
- Identifying outdated computers for retirement
- Planning for the purchase of new and more efficient hardware
- Introducing virtual machines to assume some of the work

This chapter includes the following topics:

- “Capacity Planner Component Overview,” on page 7
- “System Requirements,” on page 9
- “Assessment Workflow,” on page 13
- “Data Manager Tasks,” on page 15
- “Dashboard Tasks,” on page 17

Capacity Planner Component Overview

The full Capacity Planner architecture includes the Collector, the Data Analyzer, the Data Manager, and the Information Warehouse.

Data flows between the Capacity Planner Dashboard, Data Manager, Data Analyzer, and Information Warehouse. The Data Manager communicates with the customer's network, as well as the Collector. The Collector runs as a Windows service and performs in the background. Data that the Collector discovers and gathers is stored in a local database. The data goes from the local database back to the Data Manager to be uploaded to the Information Warehouse.

Typically on an hourly basis, data is uploaded from the local collector database to the Capacity Planner Dashboard.
Data Manager

The Data Manager is the user interface for the Data Collector and is installed with the Collector.

The Data Manager provides an organized view of the collected information and is the administrative control for the Collector.

The Data Manager configures the Collector components to perform the following functions.

- Set up and maintain job schedules.
- Set user ID and password combinations for access to target systems.
- Manually run jobs.
- View job progress, especially collection progress.
- Monitor messages that the Collector issues.

The Data Manager also performs the following functions.

- Manages the process by which collected data is sent to the Information Warehouse.
- Provides detailed and summary views and reports on all discovered objects, collected inventory information, and monitored performance data.
- Allows you to start and stop the Collector.

The Collector inventories the existing computers in an IT environment, including the type of computer, operating system, applications or services running on the computer, and so on. The Collector gathers hundreds of performance statistics from each system, such as CPU busy time, CPU idle time, and memory use.
Dashboard

The Dashboard is a Web-based application that you use to interact with the discovered inventory and performance data collected from the customer site during the assessment.

You can also view the status of ongoing assessments in the Projects and Companies tabs of the Dashboard Home page. The Dashboard resides on a secure central host site along with the Data Analyzer and Information Warehouse.

Information Warehouse

The Information Warehouse is the repository for data that the Collector gathered from all deployed collectors.

The Capacity Planner Information Warehouse contains a growing set of industry reference data that you can use for comparative analysis and benchmarking. You can use this information to guide validated server consolidation and capacity optimization decisions for the enterprise.

The stored metrics that serve as industry benchmarks are used by the Data Analyzer to perform data analysis. Information in the Warehouse is anonymous. None of the information used in the research features can be traced back to a specific customer, which is how Capacity Planner ensures data privacy. Data collected from one organization cannot be viewed by another organization.

Data Analyzer

The Data Analyzer is the Capacity Planner component that performs the evaluation required for capacity planning, such as comparing results collected for an organization to industry benchmarks and identifying trends.

After analysis, the analyzed data moves to a secure database called the Information Warehouse.

System Requirements

Host and target systems must meet certain requirements to run Capacity Planner.

Capacity Planner Host System Requirements

The host system can be a physical desktop, server, or virtual machine and must meet certain system requirements.

Table 1-1 describes the requirements for a Capacity Planner host system.

Table 1-1. Host System Requirements

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirement</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating system</td>
<td>Windows 2000 (Server or Professional) SP3, Windows XP Pro, Windows Server 2003, Windows Vista, Windows 7, or Windows Server 2008</td>
<td>The English language version is required. If the Collector is installed on Windows XP SP2, the Windows firewall must be turned off. If the collector is installed on Windows Server 2003, and collecting from Windows 2000 target systems, use the Windows 2003 R2 SP2 only.</td>
</tr>
<tr>
<td>WMI or remote registry</td>
<td>WMI (Windows Management Instrumentation) or remote registry must be installed</td>
<td></td>
</tr>
<tr>
<td>CPU</td>
<td>Minimum 1.5GHz CPU</td>
<td>Runs on 32-bit and 64-bit, hosts in 32-bit mode</td>
</tr>
<tr>
<td>Memory</td>
<td>Minimum 1GB RAM</td>
<td></td>
</tr>
<tr>
<td>Local Disk</td>
<td>2GB free disk space</td>
<td></td>
</tr>
</tbody>
</table>
Table 1-1. Host System Requirements (Continued)

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirement</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Connectivity</td>
<td>Connection to the Internet</td>
<td>Enables connection to the Capacity Planner Dashboard</td>
</tr>
<tr>
<td>Network Bandwidth</td>
<td>20,000 bytes per second during data collection</td>
<td></td>
</tr>
<tr>
<td>Browser</td>
<td>Microsoft Internet Explorer 5.5 or higher</td>
<td></td>
</tr>
<tr>
<td>Virus scanning</td>
<td>Some exceptions might be required for the duration of the assessment</td>
<td></td>
</tr>
</tbody>
</table>

Authentication Requirements

To install and run the Data Manager service, the consultant must have an administrator-level user account for each host. This account must have the privilege of logging on as a service that is configured to start automatically.

Target System Requirements

You must make sure that the target systems meet the necessary criteria for collection.

Before collection starts, you must have the answers to the following questions.

**Note** You must know whether any Windows NT target systems are within the scope of the assessment. These systems require a different setup to enable data collection.

- What is the number of target systems to be included in the scope of the assessment?
- Does the customer want to identify target systems by using the discovery method or by importing a CSV file?
- How many of the systems are servers?
- How many of the systems are workstations?
- How many of the systems are Windows?
- Of the systems that are Windows, how many are NT systems?
- How many of the systems are Linux or UNIX?
- How many of the systems are targeted for inventory only?
- How many systems are targeted for a full analysis, including discovery, inventory, and collection of performance metrics?
- Are any of the target systems located behind a firewall in a perimeter network (DMZ) and, if so, how many?

All target domains and systems must be viewable in the network viewing area on the host.

Table 1-2. Collection Requirements for Target Systems

<table>
<thead>
<tr>
<th>For Microsoft Windows Target Systems</th>
<th>For Linux or UNIX Target Systems</th>
<th>For all Target Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sure that Windows Management Instrumentation (WMI) is enabled.</td>
<td>Verify that port 22 is open.</td>
<td></td>
</tr>
<tr>
<td>Enable Remote Registry.</td>
<td>Verify that the sshd daemon is running.</td>
<td>Verify network bandwidth availability</td>
</tr>
<tr>
<td>Enable Performance Monitor (Perfmon).</td>
<td></td>
<td>Verify that the Collector can access the target systems with sufficient privileges.</td>
</tr>
</tbody>
</table>
Table 1-2. Collection Requirements for Target Systems (Continued)

<table>
<thead>
<tr>
<th>For Microsoft Windows Target Systems</th>
<th>For Linux or UNIX Target Systems</th>
<th>For all Target Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable file and print services.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On Windows NT target systems, install and enable WMI and Diskperf service.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Supported Target Systems**

Capacity Planner 2.8 can collect data from the following target systems.

Table 1-3. List of Windows and Linux Target Systems

<table>
<thead>
<tr>
<th>Windows Systems</th>
<th>Linux/UNIX systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows NT 4.0 Server</td>
<td>HP-UX 10.xx (PA-RISC)</td>
</tr>
<tr>
<td>Windows NT 4.0 Professional Workstation</td>
<td>HP-UX 11 (PA-RISC)</td>
</tr>
<tr>
<td>Windows 2000 Server/Advanced Server/Datacenter</td>
<td>HP-UX 11.11 (PA-RISC)</td>
</tr>
<tr>
<td>Windows 2000 Server (64-bit Itanium)</td>
<td>HP-UX 11.22 (PA-RISC)</td>
</tr>
<tr>
<td>Windows 2000 Professional Workstation</td>
<td>HP-UX 11.23 (Itanium)</td>
</tr>
<tr>
<td>Windows XP Professional</td>
<td>Sun Solaris 7 (SPARC)</td>
</tr>
<tr>
<td>Windows XP Professional (EM64T, AMD 64)</td>
<td>Sun Solaris 8 (SPARC)</td>
</tr>
<tr>
<td>Windows Server 2003</td>
<td>Sun Solaris 9 (SPARC)</td>
</tr>
<tr>
<td>Windows Server 2003 (64-bit Itanium)</td>
<td>Sun Solaris 9 (x86)</td>
</tr>
<tr>
<td>Windows Server 2003 (64-bit x86 / EM64T / AMD64)</td>
<td>Sun Solaris 10 (SPARC)</td>
</tr>
<tr>
<td>Windows Vista Enterprise</td>
<td>Sun Solaris 10 (x86)</td>
</tr>
<tr>
<td>Windows Vista Business</td>
<td>SUSE Linux Enterprise 11</td>
</tr>
<tr>
<td>Windows Vista Ultimate</td>
<td>SUSE Linux Enterprise Server 9</td>
</tr>
<tr>
<td>Windows 7</td>
<td>SUSE Linux 10</td>
</tr>
<tr>
<td>Windows Server 2008</td>
<td>SUSE Linux 9</td>
</tr>
<tr>
<td>Windows Server 2008 R2</td>
<td>SUSE Linux 8</td>
</tr>
<tr>
<td>Red Hat Linux 8</td>
<td></td>
</tr>
<tr>
<td>Red Hat Linux 9</td>
<td></td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 6</td>
<td></td>
</tr>
<tr>
<td>Red Hat Enterprise Linux (ES/AS/WS) 5</td>
<td></td>
</tr>
<tr>
<td>Red Hat Enterprise Linux (ES/AS/WS) 4</td>
<td></td>
</tr>
<tr>
<td>Red Hat Enterprise Linux (ES/AS/WS) 3</td>
<td></td>
</tr>
<tr>
<td>AIX 5.1</td>
<td></td>
</tr>
<tr>
<td>AIX 5.2</td>
<td></td>
</tr>
<tr>
<td>AIX 5.3</td>
<td></td>
</tr>
</tbody>
</table>

**Target System Port Availability Requirements**

The collector host must be able to connect to all target systems using specific protocols and ports. All ports use TCP/UDP protocol.
Table 1-4. Port Availability Requirements for Target Systems

<table>
<thead>
<tr>
<th>Port</th>
<th>Service</th>
<th>Description</th>
<th>MS Windows Services Using This Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Secure Shell (SSH)</td>
<td>Used for secure logins, file transfers, and port forwarding</td>
<td></td>
</tr>
<tr>
<td>135</td>
<td>loc-srv/epmap</td>
<td>Microsoft Data Communications Exchange (DCE) Locator, also known as End-point Mapper</td>
<td>DHCP Server, DNS Server, WINS Server</td>
</tr>
<tr>
<td>137</td>
<td>netbios-ns (NetBIOS names service)</td>
<td>Firewall administrators frequently see large numbers of incoming packets to this port because as users behind firewalls browse Windows-based Web sites, those servers frequently respond with NetBIOS lookups.</td>
<td>DNS Server, WINS Server</td>
</tr>
<tr>
<td>138</td>
<td>netbios-dgm (NetBIOS datagram)</td>
<td>Port 138 is used primarily by the Server Message Block (SMB) browser service that obtains Network Neighborhood information.</td>
<td></td>
</tr>
<tr>
<td>139</td>
<td>netbios-ssn (NetBIOS session)</td>
<td>Windows file and printer sharing</td>
<td></td>
</tr>
<tr>
<td>445</td>
<td>DNS (Domain Name Service (DNS) Direct Hosting port)</td>
<td>In Windows 2000 and XP, redirector and server components support direct hosting for communicating with other computers running Windows 2000 or XP.</td>
<td>Active Directory</td>
</tr>
</tbody>
</table>

Target System Authentication Requirements

Account credentials are required on all target systems that are to be included in the assessment data collection.

The onsite system administrator can provide a global connection account that has local administrator rights on all the target systems that are to be analyzed. If this account cannot be arranged for security reasons, the onsite system administrator can set accounts, or credentials, in the Data Manager. User account information is stored in the local Collector database, not in the Information Warehouse.
Assessment Workflow

The assessment timeline includes managing tasks from the Data Manager, Collector, and Dashboard.

**Figure 1-2. Engagement Timeline and Workflow**

<table>
<thead>
<tr>
<th>Timeline</th>
<th>Workflow</th>
<th>Customer Site</th>
<th>Dashboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>before project starts</td>
<td>pre-assessment consultation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>assessment begins</td>
<td>Collector Installation</td>
<td></td>
<td>Start Server or Desktop Project for New Customer Company from Home Page</td>
</tr>
<tr>
<td>week 1</td>
<td>Discover or Import systems</td>
<td></td>
<td>Monitoring</td>
</tr>
<tr>
<td>monitoring and data inspection</td>
<td>Data Collection &amp; Synchronization</td>
<td></td>
<td>Analysis and Findings</td>
</tr>
<tr>
<td>week 2</td>
<td>Consolidation Estimate (CE)</td>
<td></td>
<td>Final Analysis</td>
</tr>
<tr>
<td>Projects ends</td>
<td>continue gathering data for improved results</td>
<td></td>
<td>Prepare Reports</td>
</tr>
<tr>
<td>week 3</td>
<td>Server and Desktop Projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ends</td>
<td>after project ends</td>
<td>post-assessment consultation</td>
<td></td>
</tr>
</tbody>
</table>
Types of Projects

Each type of assessment has a different goal.

Table 1-5. Assessment Types and Results

<table>
<thead>
<tr>
<th>Assessment Type</th>
<th>Description</th>
<th>Assessment Performed By</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consolidation Estimate (CE)</td>
<td>Estimate of the potential savings from implementing an assessment. Only key inventory and performance metrics are collected over a period of several days.</td>
<td>Sales engineers, partners or consultants who have not attended Capacity Planner training as well as trained partners and consultants.</td>
<td>Two consolidation and virtualization scenarios, one aggressive and one conservative. Standard interim and final reports.</td>
</tr>
<tr>
<td>Consolidation Analysis (CA)</td>
<td>A thorough study that collects inventory and performance metrics over a month or longer, taking into account monthly fluctuations. Provides a detailed analysis of potential savings available through consolidation and virtualization.</td>
<td>Only trained partners and consultants.</td>
<td>Unlimited consolidation and virtualization scenarios. Standard interim and final reports as well as detailed analytical reports, such as forecasting, alerts, and anomaly detection.</td>
</tr>
<tr>
<td>Virtual Desktop Infrastructure (Desktop)</td>
<td>A thorough study that collects inventory and performance metrics for networks, subnets, locations, users, and logins taking into account monthly fluctuations to help users analyze Virtual Desktop Infrastructure (Desktop) environment readiness for virtualization.</td>
<td>Only trained partners and consultants.</td>
<td>Unlimited consolidation and virtualization scenarios. Standard interim and final reports as well as detailed analytical reports, such as forecasting, alerts, and anomaly detection.</td>
</tr>
</tbody>
</table>

Starting an Assessment

You can start a new company to gather and convey information. Instead of creating a separate company for each type of assessment, you can create multiple CA, CE, or Desktop projects within the same company.

Projects use the same data collected within a company for performing different assessments. You can view the status of ongoing assessments on the Projects and Companies tabs of the Dashboard home page.

Gather the following information before an assessment begins, to inform the direction the assessment takes.

- Determine the organization’s goals for performing the assessment and decide what type of assessment would meet those goals.
- Collect information about computers in the organization’s environment, such as number, location, and type. Computers being assessed are referred to as target systems and can be Microsoft Windows, Linux, or UNIX computers (either servers or workstations).
- Scope the assessment to determine whether to evaluate all target systems in the organization or only a subset.
- Understand the organization’s network and security infrastructure. Consultants performing an assessment need access to target systems to collect inventory and performance data.
- Discuss authentication, network connectivity, and security issues that might need to be resolved before data collection.
Exchange contact information, such as telephone and email address, for all members of the assessment team.

Decide on a host system on which to install the software to gather and upload the data.

Post-Assessment Tasks

Post-assessment tasks include presenting final reports and proposals, conducting any follow-up tasks that were previously agreed upon, and uninstalling the Data Manager from the host computer.

After the assessment concludes, you can present the results of the data analysis and a proposal for consolidation and virtualization.

You can uninstall the Data Manager from the host computer or deactivate the database ID. Either action stops data from being collected and uploaded to the Information Warehouse.

Data Manager Tasks

After the Data Manager is installed, you identify systems and collect data.

- **Identifying Systems** on page 15
  
  You can identify systems to collect data from either by discovery or by importing a .csv list.

- **Data Collection** on page 16
  
  Data collection focuses on inventory and performance information.

Identifying Systems

You can identify systems to collect data from either by discovery or by importing a .csv list.

An organization might want to evaluate all target systems in the organization, or a subset of the systems.

If you have find connectivity problems, you can correct them at this time by using the Test Connection feature in the Data Manager.

Specify a schedule for additional discovery jobs to take place during the assessment to find target systems that were not in service but are restored to service during the assessment period.

The Data Manager includes a navigation pane with a navigation tree that shows which target systems were imported and how the target systems might be grouped by domain, department, physical location, and so on. Review the target systems that appear in the navigation pane to verify that the systems shown match the scope of the assessment agreed upon in the preassessment consultation.

Discovering Systems

You can start the discovery process in the Data Manager.

This method has the advantage of helping organizations find target systems that might be forgotten.

After Capacity Planner is installed and configured, confirm whether the Collector has discovered the target systems that an organization wants to evaluate. The discovery process validates that all target systems are found.

Importing Systems

You can import a list of systems to collect data from.

You can import The target systems from a list in a comma-separated values (CSV) file. If this list is the exclusive source of systems to be assessed, computers in the network that are not on the import list are not evaluated during the assessment. The list is typically agreed upon during the preassessment consultation.
Data Collection

Data collection focuses on inventory and performance information.

Inventory Data Collection

Inventory data collection finds hardware and software information for each target system. Inventory is attempted every day for systems that have not been inventoried. Inventory data includes the following information about a target system.

<table>
<thead>
<tr>
<th>CPU</th>
<th>Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical disks</td>
<td>Network interface cards (NICs)</td>
</tr>
<tr>
<td>Services or daemons</td>
<td>Applications</td>
</tr>
<tr>
<td>Shares</td>
<td>File systems</td>
</tr>
<tr>
<td>Users</td>
<td>User groups</td>
</tr>
<tr>
<td>Logins</td>
<td>Networks</td>
</tr>
<tr>
<td>Locations</td>
<td>IP subnets</td>
</tr>
</tbody>
</table>

Performance Data Collection

Performance data collection is a sampling of statistical information collected from each target system. The sampling is done using hundreds of performance counters, such as % Idle Time, % Processor Time, network latency, and network session time. The counters provide average, mean, minimum, and maximum performance statistics. Performance collection occurs every hour.

Excluding Information from Collection

You can configure the Collector to exclude categories of information from inventory or counters from performance collection. Excluded information is not evaluated by the Data Analyzer or uploaded to the Information Warehouse.

Typical Assessment

The typical CA, CE, or Desktop assessment lasts four weeks to accommodate monthly fluctuations in activity, such as a month-end billing cycle. The exception is a CE assessment. Because a CE is only an estimate, collection is typically done for just a few days. For more information on types of assessments, see “Types of Projects,” on page 14.

After installation and the discovery phase is complete, the Data Manager is left running on the host at the customer site and continues to collect inventory and performance data. You can monitor the activity remotely from the Capacity Planner Dashboard and make corrections as needed.

Capacity Planner collects data by using the following utilities that are provided with the target system’s own operating system.

- Windows Management Instrumentation (WMI)
- Remote Registry
- Remote Procedure Call (RPC)
- Perfmon
- Secure Shell (SSH)
Dashboard Tasks

After setup is complete and data collection progresses, you can review the results, create consolidation scenarios to model potential changes, and create reports from the Dashboard.

You can perform tasks in the Dashboard after the first week of data collection.

Monitoring

You can check the progress of your assessment in the Projects and Companies tabs of the Dashboard.

The inventory and performance success rate is summarized week by week for the data collected in the past 12 weeks. If problems occur, such as the Collector being stopped, a notification is sent to you.

Analysis

After a week of collection, you can view the results of the data collection in the Dashboard.

Several data views in the Dashboard provide this information.

<table>
<thead>
<tr>
<th>Forecast Critical Processors</th>
<th>A list of target systems and the number of weeks until each target system reaches a critical usage point (greater than 50% of capacity).</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Processor Load View</td>
<td>A summary of how each server or workstation is used during standard business hours compared to use during the peak hour (the highest use in a 24-hour period).</td>
</tr>
<tr>
<td>Anomalies Summary</td>
<td>A summary of target systems with performance data that deviates from industry average values.</td>
</tr>
<tr>
<td>Vintage Systems</td>
<td>A view of target systems operating below a minimum performance threshold.</td>
</tr>
<tr>
<td>Base Image Manager</td>
<td>You can work with templates based on software profiles with an approved operating system that are used to create a consolidation profile that uses new virtual machines.</td>
</tr>
</tbody>
</table>

Modeling

As the assessment enters the third or fourth week of data collection, you can prepare preliminary consolidation and virtualization models called scenarios.

By trying various scenarios, you can determine more efficient and cost-effective ways to structure the IT setup.

When you prepare scenarios, consider several approaches. One scenario might suggest more aggressive recommendations and another a more moderate approach. A scenario might include recommendations to purchase new hardware to increase efficiency or to introduce virtualization technology on existing target systems to balance the workload.

Reporting

Preparing reports is a final step in a capacity planning engagement.

As the assessment period ends, you can run final scenarios and prepare reports for presentation of the assessment findings.
With application analysis, you can analyze applications and select applications for software profile management and base image management.

The application analysis workflow has several stages. Desktop applications are analyzed to determine what common applications are used by different users. From this analysis, software profiles are created. The software profiles are used to create base images. The steps in this process are collecting, filtering, sorting information into base images, sizing the virtual machines, and placing them in a database.

This chapter includes the following topics:

- “Software Profiles,” on page 20
- “Base Images,” on page 20
- “Sizing Virtual Machine Templates,” on page 20
- “Performing Basic Tasks Using Capacity Planner,” on page 21
**Software Profiles**

Software profiles are used to analyze application use. The analysis is used to create base images that reflect user patterns.

Capacity Planner uses software profiling to standardize the use of applications and operating systems. Profiles can be linked to indicate that standardization should be done if an application appears. You can determine what applications or operating systems to use to create profiles.

**Base Images**

Application inventory analysis creates base images and ThinApp images.

ThinApp images contain applications that are approved virtualization candidates. ThinApp images are used to virtualize applications without virtualizing entire systems.

Base images contain software profiles, ThinApp applications, and an operating system.

**Figure 2-2. Application Analysis Assists Base Image Creation**

**Sizing Virtual Machine Templates**

Base images are used to create virtual machine templates, which can be sized.

A virtual machine template contains an operating system, software, and virtual machine sizing parameters. Each virtual machine is sized, based on usage, into three templates: low, medium, or high.
Performing Basic Tasks Using Capacity Planner

After you become familiar with the Capacity Planner components, you can perform basic tasks.

Table 2-1. Basic Tasks

<table>
<thead>
<tr>
<th>Task</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create your account in the Dashboard.</td>
<td><a href="http://optimize.vmware.com">http://optimize.vmware.com</a></td>
</tr>
<tr>
<td>Start a new company.</td>
<td>Dashboard &gt; Home &gt; Start new Company</td>
</tr>
<tr>
<td>Start a new project.</td>
<td>Dashboard &gt; Home &gt; Start new Project</td>
</tr>
<tr>
<td>Set up the company to be assessed.</td>
<td>Dashboard &gt; Administration &gt; Company Setup</td>
</tr>
<tr>
<td>Download and install the Data Manager.</td>
<td>Capacity Planner 2.8 Installation Guide</td>
</tr>
<tr>
<td>Add accounts for target systems.</td>
<td>Data Manager &gt; Objects &gt; &lt;system&gt;</td>
</tr>
<tr>
<td>Connect to the target systems and test.</td>
<td>Data Manager &gt; Home &gt; Test Collection</td>
</tr>
<tr>
<td>Register the Collector.</td>
<td>Data Manager &gt; Home &gt; Register Collector</td>
</tr>
<tr>
<td>Register a database ID.</td>
<td>Dashboard &gt; Company &gt; Register Database IDs or Dashboard &gt; Project &gt; Register Database IDs</td>
</tr>
<tr>
<td>Synchronize the data upload from the collectors to the Dashboard and test the synchronization.</td>
<td>Data Manager &gt; Home &gt; Synchronize Data</td>
</tr>
<tr>
<td>Create systems templates.</td>
<td>Dashboard &gt; Company &gt; Project Tools &gt; System Templates</td>
</tr>
<tr>
<td>Create software profile templates.</td>
<td>Dashboard &gt; Company &gt; Project Tools &gt; Software Profile Templates</td>
</tr>
<tr>
<td>Create a new user.</td>
<td>Dashboard &gt; Administration &gt; Users</td>
</tr>
<tr>
<td>Set up notifications.</td>
<td>Dashboard &gt; Administration &gt; Notifications</td>
</tr>
<tr>
<td>Run reports.</td>
<td>Dashboard &gt; Reports</td>
</tr>
</tbody>
</table>
Index

A
analysis 17
anomalies 17
application analysis 19
applications 20
assessment 17
assessment workflow 13
assessments 14
authentication 12

B
base image 20
base image manager 17
base images 19, 20
basic tasks 21
benchmarks 9

C
capacity planning 7
collection dashboard 17
collector 7, 8
Collector 9
collectors 9
configure tasks 8
connectivity 15
consolidation 17
consolidation analysis 14
consolidation estimate 14
consolidation scenarios 17
CPU 9
critical processors 17
CSV 10, 15

D
Dashboard 7, 9, 17
Data Analyzer 7, 9
Data Manager 7, 8, 15
Data Manager tasks 15
desktop 14
discovery 15
DNS 11

F
forecast critical processors 17

G
global connection account 12

I
images 20
importing systems 15
Information Warehouse 7, 9
information, exclude 16
intended audience 5
inventory data 16
IT environment 8

L
Linux 15

M
MDAC 9
memory 9
metrics, stored 9
modeling 17
monitoring 17
My Assessments table 17

N
navigation pane 15
navigation tree 15
NetBIOS 11
network connectivity 9

O
operating system 9

P
Perfmon 16
PerfMon 10
performance data 16
ports 11
post-assessment 15
pre-assessment consultation 15
printer sharing 11
processor load 17
project 14

R
remote registry 9
Remote Registry  16
   reports  17
   repository  9
RPC  16

S
   scenarios  17
   secure shell session  15
   sizing  20
   software profiles  20
SSH  11, 15, 16
   standardization  20
   system requirements  9

T
   TCP/UDP protocol  11
   template, virtual machine  20
   ThinApp images  20
   trends  9
   typical assessment  16

U
   UNIX  15

V
   vintage systems  17
   virtual desktop infrastructure  14
   virtual machine  20
   virtual machine template  20
   virtualization models  17

W
   WMI  9, 10, 16