

Service Level Dashboard for System Center Operations Manager 2007 R2

User Guide

Version 2.0

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# **Introduction**

The Service Level Dashboard for System Center Operations Manager 2007 R2 addresses the need that managers, application owners, and IT professionals have to make sure that their resources (applications and systems) are available and performing at acceptable levels. It does this by tracking, reporting, and helping to manage service levels for line-of-business (LOB) applications. Most organizations have a number of LOB applications that are managed by IT and used by one or more business groups. The work that these applications perform is often business-critical. IT and the primary user of the application customarily seek to ensure that an application’s performance and availability meet requirements by putting in place a service level agreement (SLA). The SLA governs a range of service aspects of applications that can include everything from outage response time to disk space availability.

In order to determine that a service level commitment is being met, IT and business users must be able to monitor service levels.

The Service Level Dashboard meets the need of organizations to track service levels not only for an application, but also for an application as a service, a group, or a class of object. It identifies any shortfalls between service goals and actual performance, thereby enabling organizations to accurately measure and view, in near real time, Service Level Objectives (SLOs) for business-critical applications or groups of objects within Microsoft® System Center Operations Manager 2007 R2. This means that organizations are aware of problems as soon as they appear and can track their relative business impact. The Service Level Dashboard also helps IT to proactively fix problems in services before service levels are breached.

## Who Should Read This Guide

This guide is written for two primary audiences: IT professionals and business users.

### IT Professionals

This group, which includes system and site administrators, is responsible for configuring service management applications. They will find guidance for configuring the tool and the environment in the “,” “Creating Service Level Dashboard Sites,”” and “Configuring Service Level Dashboards” sections.

It is assumed that these users are familiar with the technical aspects of Operations Manager 2007 and its components, and how those components interact. They know how to configure the Operations Manager to produce the information needed by the IT service manager, operations managers, and other business users. They also know how to configure portal pages in Windows SharePoint Services®, as well as how to customize content based on the portal user’s group membership.

**Note** In some organizations, the roles of system administrator and site administrator are filled by one person. In this guide, the role is referred to simply as IT administrator.

### Business Users

This group includes operations managers and IT service managers, who are responsible for defining and maintaining service levels. They use the service management data that the tool produces to improve the performance of the managed services. The managers identify target performance and threshold levels and identify the actions to take in response to errors or warnings. The group will find guidance for locating and interpreting the information they need on the dashboard in the “Viewing the Service Level Data” section. It is assumed that the group is familiar with using SharePoint portals to view content, and knows how to personalize the portals to refine the content display.

**Note** The “References” section provides links to all of the resources to which this guide refers.

## How the Service Level Dashboard Works

The Service Level Dashboard is an application built on Windows SharePoint Services 3.0. It is designed to work with an existing Operations Manager 2007 R2 infrastructure configured to monitor business-critical applications. When the Service Level Dashboard components are configured and operating, the dashboard displays summarized data about service levels.

In Operations Manager 2007 R2, you define your service goals (called “service level objectives” or SLOs). The Service Level Dashboard evaluates each SLO over the defined dashboard time period and determines if it met the goal during that period and for how long. The dashboard displays each SLO and identifies its states, based on defined service level targets. The dashboard can display a maximum of six different applications or groups.

The following diagram illustrates, at a high-level, the process flow that occurs within the Service Level Dashboard environment:

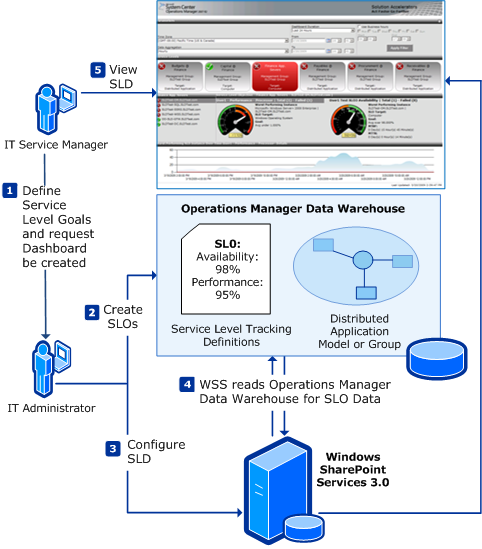
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Figure1. Service Level Dashboard Process Flow

The Service Level Dashboard integrates with the Operations Manager Data Warehouse database and displays service level metrics on the Windows SharePoint Services interface. All the customized and personalized data associated with the Web Parts of the Service Level Dashboard is stored in the Windows SharePoint Services Content database.

The dashboard can summarize the current status and health of all defined SLOs against an application or group of objects. Key measures used to evaluate various aspects of the health of defined SLOs include such information as service level metrics, mean time to repair (MTTR), mean time between failures (MTBF), and service level trends.

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## New in Version 2.0

This version of the Service Level Dashboard for System Center Operations Manager 2007 R2 includes the following changes:

* **Near real-time data latency**. The data latency is now near real-time at two to three minutes.
* **Dashboard metrics for service level tracking**. New metrics facilitate the tracking of **M**ean **T**ime **T**o **R**epair (MTTR), **M**ean **T**ime **B**etween **F**ailures (MTBF), and application service level trends.
* **New presentation platform**. This version uses Windows SharePoint Services 3.0 as a presentation platform.
* **Authentication**. The Service Level Dashboard now uses Windows SharePoint Services groups to authenticate users and sites.
* **Service level objectives** **(SLOs).** Administrators can use the new Service Level Tracking feature in Operations Manager to configure service goals for applications and groups.

# **Getting Started with the Service Level Dashboard**

This section covers the following topics:

* Requirements for the Service Level Dashboard 2.0.
* Configuring Operations Manager 2007 R2. These activities include translating service level targets established in earlier versions of the Service Level Dashboard into SLOs.
* Installing the Service Level Dashboard on Windows SharePoint Services.

## Requirements for the Service Level Dashboard

Service Level Dashboard 2.0 integrates with an already functioning deployment of Operations Manager 2007 R2 and has no additional infrastructure requirements. It is assumed that Operations Manager 2007 R2 and the Data Warehouse database are configured in accordance with Microsoft installation guidance.

The following table lists software requirements for the Service Level Dashboard:

Table 1. Service Level Dashboard 2.0 Software Requirements

| **Infrastructure** | **Resource** |
| --- | --- |
| Software | * Operations Manager 2007 R2 with Reporting and Data Warehouse * Windows SharePoint Services 3.0 SP1   **Note**   Microsoft Office SharePoint Server 2007 SP1 is supported as an alternative to Windows SharePoint Services 3.0.   * SQL Server 2005 SP2 or SQL Server 2008.   **Note** Typically, WSS and MOSS installations install SQL Server Embedded Edition, which does not meet the Service Level Dashboard requirement to create SLD content database.   * Microsoft .NET Framework 3.5 |
| Browser | * Microsoft Internet Explorer® 6.0 or Internet Explorer 7.0.   **Note**   The Service Level Dashboard has not been tested on Internet Explorer 8.0. |

Users of Windows Server® 2003 can download Windows SharePoint Services® from TechNet. For more information, see Download Windows SharePoint Services 3.0.

<http://technet.microsoft.com/en-us/windowsserver/sharepoint/bb400747.aspx>

For installation instructions, see [Downloadable book: Installation guide for Windows SharePoint Services 3.0](http://technet.microsoft.com/en-us/library/cc288653.aspx).

You can download Microsoft .NET Framework 3.5 from [Microsoft .NET Framework 3.5](http://www.microsoft.com/downloads/details.aspx?FamilyID=333325fd-ae52-4e35-b531-508d977d32a6&DisplayLang=en) on the Microsoft Download Center.

## Configuring Operations Manager 2007 R2

The Service Level Dashboard pulls service level metrics from the Operations Manager Data Warehouse database. Therefore, it is necessary to configure all service level metrics in Operations Manager to support the dashboard.

Configuring Operations Manager 2007 R2 involves two activities:

* Define service level objectives (SLOs) for the applications, groups or other class of objects that you want to track.
* If you are updating from an earlier version of the Service Level Dashboard, you can use Operations Manager to translate existing service level targets to SLOs.

If you have not already performed these configuration activities, refer to the following sections for guidance. If you have performed and verified the configurations, no further action is required.

### Define a Service Level Objective for an Application, a Group, or Other Class of Objects

The new Service Level Tracking feature in Operations Manager 2007 R2 offers the capability to define SLOs that you can then use to track the health of an application or group. You can define an SLO for an application, a group, or other class of objects. These SLOs focus on such targets as availability and performance. For example:

* Tracking SLOs measure service level objectives from information gathered from any monitor (but typically availability or health monitors) in Operations Manager 2007 R2.
* Collection Rule SLOs measure service level objectives from information gathered from any collection rule in Operations Manager 2007 R2. Typical performance collection rules include Processor Utilization and Transaction Response Time counters.

In Operations Manager 2007 R2 the procedure to define an SLO for either an application or group is the same. The following steps indicate where to differentiate between an application and a group by using **Distributed Application** or **Group**. To see procedures that include the precise values, see “Appendix: Sample Scenarios,” which includes two relevant procedures.

To define an SLO for an application or group

1. In the Operations console, from the Authoring view, click **Management Pack Objects** and then, in the Authoring navigation tree, click **Service Level Tracking**.
2. In the Actions pane, click **Create.**
3. In the **Name** box, type the name of the application or group. You can optionally provide a description. Click **Next**.
4. Under **Targeted class**, click **Select** to specify the class for the service level, and then click **Distributed Application or Group**.
5. You can use the **Scope** option to narrow the service level. The default value is to use all objects of the targeted class.
6. Select the management pack where this service level will be saved. You can use an existing management pack or create a new one.

**Note**   By default, Operations Manager saves the setting to the Default Management Pack. As a best practice, you should create a separate management pack for service level tracking and save all service levels there

1. Click **Next**.
2. On the Service Level Objectives page, click **Add** and then click **Monitor state SLO** to create a new monitor to track the availability of the application or group.
3. Define the state monitor as follows:
4. In the **Name** box, type the name of SLO. For example **Availability SLO App Test**
5. Under **Targeted class**, click **Select** to specify the class for the service level, and then selectthe appropriate class based on your requirements.
6. Under Monitor, click Availability.
7. For **Service level objective goal**, provide the numerical measure for your objective. For example, if your goal is 99.99 percent availability, type **99.990**.
8. To refine what the monitor tracks as available, select or clear any of the following state criteria to be counted as downtime:

* Unplanned maintenance
* Unmonitored
* Monitoring unavailable
* Monitor disabled
* Planned maintenance
* Warning

1. Click **OK**.
2. Optionally, on the Service Level Objectives page, you can add more SLOs. For example, you can add a new **Performance rule SLO** to create a new collection rule to track the performance of the application.
3. Click **Next**.
4. Review the summary, and then click **Finish**.
5. On the Completion page, click **Close**.

To validate the creation of the service level objective

* In the Service Level Tracking pane, select the new service level, and then, in the Action pane, click **Properties**.

For more information about how to create an SLO, see the *Operations Manager 2007 R2 Beta Highlights Guide* on [Microsoft Connect](http://go.microsoft.com/fwlink/?LinkID=79804).

### Translate Service Level Targets from Earlier Versions of the Service Level Dashboard

If you have implemented an earlier version of the Service Level Dashboard, you probably have established service level targets for one or many distributed applications in your organization. This section explains how to translate these targets into SLOs in Operations Manager 2007 R2 for Service Level Dashboard 2.0.

**Note**   After you finish translating the service level targets into SLOs in Operations Manager 2007 R2, you do not need to delete the goals defined in the previous version of the Service Level Dashboard. Their existence in Operations Manager will not affect the functionality of the Service Level Dashboard or Operations Manager.

#### How to Translate Existing Service Level Targets into SLOs

Previous versions of the Service Level Dashboard calculated both availability and performance based on the health state data of an application. Specifically, availability calculations were based on the time an application was in the error state, performance calculations were based on the time an application was in both the error and warning states. Service level targets were defined for the dashboard by using the Operations Manager 2007 Override feature. Service Level Dashboard 2.0 uses the new Service Level Tracking feature in Operations Manager instead

Like earlier versions, Service Level Dashboard 2.0 bases its availability calculations on health state data. However, performance calculations can now be based on both health state data and on performance counter data. If your goal is to create SLOs that match the existing service level targets as closely as possible, you should use only health state data (error states and warning states) when you define the SLOs. If, however, you want to refine your performance tracking, you can create additional SLOs based on performance counter data.

You can use the procedure in the previous section to translate existing service level targets into SLOs. To do so, first identify the existing service level targets. To view a list of existing service level targets, open the Operations Manager Console, and then, from the monitoring view, click **Service Level Dashboard Attributes**. You can then use the information from this list to populate the values in the previously described procedure to define an SLO for an application or group.

For a procedure that illustrates the values to use, see Scenario 3: Translating Service level targets into SLOs” in “Appendix: Sample Scenarios”

## Install the Service Level Dashboard

After you have configured Operations Manager 2007 R2 with the SLOs required for tracking, you can install the Service Level Dashboard on the servers running Windows SharePoint Services 3.0 SP1 or Microsoft Office SharePoint Server 2007 SP1. Remember that you need to have administrative privileges on the servers on which the application will be installed.

To install the Service Level Dashboard 2.0

1. Download the .zip file **Service Level Dashboard 2.0.zip** to your computer.
2. Copy the Management Pack from the location you specified during download to the Operations Manager management server.

**Note** This management pack is essential to update the stored procedures required for SLD functionality.

1. In the Operations Manager Operations console, from the Administration view, click **Management Packs** and choose Import Management Pack.
2. Follow the instructions to import the Management Pack. The file name is Microsoft.EnterpriseServiceMonitoring.ServiceLevelDashboard.R2.MP.
3. After the import process is complete and the dialog box displays an icon next to the management pack indicating success or failure of the importation, click **Close**.
4. Copy the **ServiceLevelDashboardV2\_x86.msi** or **ServiceLevelDashboardV2\_x64.msi** (whichever one is appropriate for your system) file from the location you specified during download to a Windows SharePoint Server that has SharePoint 3.0 Central Administration installed.
5. Run the .msi file to begin the installation process.
6. Follow the steps in the installation wizard, which will prompt for the following information:

Table 2. Installation Wizard User Input

| **User Input Parameter** | **Description** | **Format** |
| --- | --- | --- |
| Operations Manager Username | Application pool identity (should be a domain user).  **Note** SLD installation sets this user credential for the application pool in IIS. It also creates a SLDReader Role on the Operations Manager Data Warehouse database and assigns the user account to the SLDReader Role. | *Domain\UserName* |
| Operations Manager User Password | Password, for login to Operations Manager. |  |
| Operations Manager Data Warehouse Server Name | Operations Manager Data Warehouse server | *Server name\InstanceName*  *(If SQL Server is installed on the default instance, specify only the Server Name for this property)* |
| Operations Manager Data Warehouse Database Name | Operations Manager Data Warehouse database | *Database Name* |
| Site Owner’s Login Name | User account for the SharePoint site administrator | *Domain*\*UserName* |
| Site Owner’s E-mail address | E-mail address for the SharePoint administrator | *email@contoso.com* |
| SharePoint Database Server Name | Windows SharePoint Services content database server name | *Server name\Instance Name*  *(If SQL Server is installed on the default instance, specify only the Server Name for this property)* |
| SharePoint Session Database Name | Windows SharePoint Services content database name | *Database Name* |
| Service Level Dashboard SharePoint Site URL | The URL for the SharePoint site being created.  Example: http://servername:51918 | *http://<server name>:<port number>*  **Note** Do not use localhost for server name. Instead use the actual name of the server / IP address. If localhost is specified for Server Name, users may not be able to access the dashboard from other machines by navigating to *http://<ServerName>:<PortNumber>* Instead they will have to use *http://<ServerName>:<PortNumber>/Default.aspx*. |

1. When you receive a message that indicates the Gauge Controls, Site Template and Web Parts are installed successfully, click Close.

## Configure the Initial Service Level Dashboard

After you have completed the setup wizard, the Service Level Dashboard site you created will be blank and you will need to configure it. You can use the procedures in this section to configure the initial site and any additional sites that you later create. For example, you may want to create a separate dashboard for each department in your organization.

If you create a sub-site under the original site, you will not have to create multiple URLs. Users who have access to multiple dashboards can view them all in the same browser window, in tabbed format, and access the sub-sites beneath each.

Configuring a Service Level Dashboard site involves taking steps to:

* Grant permissions to users to access the site
* Configure the default appearance of the dashboard by
* Selecting the service levels that the dashboard displays
* Selecting default values for the dashboard

You can use the **Site Actions** menu on the SharePoint site page to grant permissions. To configure the dashboard, access the Dashboard Configuration Web Part through the **Site Actions** menu.

### Grant User Permissions to the Site

For each site, you need to decide how to categorize users and what permission levels to assign to each user.

The most efficient way to organize permissions for users is to use groups, which help you to manage sets of users rather than individuals. You can organize users into several groups, or just a few. You can also add users to default groups already created within each site. The Service Level Dashboard uses two of the three default groups available in SharePoint:

* Visitors, with Read permissions
* Owners, with Full Control permissions

Site Administrators have Full Control whereas all other users have Read permissions. For more information about groups and permissions, see [Determine permission levels and groups to use (Windows SharePoint Services)](http://technet.microsoft.com/en-us/library/cc287625.aspx).

If you have not yet set up any groups for the newly created site, you must set up groups before you can add any users to groups. You also have the option to add users individually, without setting up groups. To specify to which group to assign site visitors, site members, site owners, or other users, use the following procedure. This procedure helps you set up the default groups, but you can also create additional groups.

To create groups for a site

1. On the site home page, on the **Site Actions** menu, click **Site Settings**.
2. On the Site Settings page, click **People and Groups**.
3. On the People and Groups page, on the **Quick Launch**, click Groups.
4. On the People and Groups: All Groups page, on the **Settings** menu, click **Set up Groups**.
5. On the **Set up Groups** menu , select a group for each set of users that you want to change. Alternatively, select **Create a new group** to assign a set of users to a custom group.

**Note**    Remember to use the Visitors group type to set up groups for users who only need Read permissions on the site.

Use the following procedure to add users to a group after you have configured groups for the site.

To add users to a group

1. On the Site Home page, on the **Site Actions** menu, click **Site** **Settings**.
2. On the Site Settings page, click **People and Groups**.
3. On the People and Groups page, on the **Quick Launch**, click **Groups**.
4. Click the name of the group to which you want to add users.
5. On the People and Groups: Group name page, on the **New** menu, click **Add Users**.
6. On the Add Users page, type the account names that you want to add, or browse to find users from Active Directory Domain Services.
7. In the **Give Permission** section, be sure that **Add users to a SharePoint group** is selected and that the correct group is displayed.
8. Click **OK**.

For more information about managing users and groups, see [Enable access for end users (Windows SharePoint Services)](http://technet.microsoft.com/en-us/library/cc287822.aspx).

### Configure the Default Appearance of a Dashboard

You will need to use the Dashboard Configuration Web Part to configure a new site by choosing the service levels to be displayed and setting the default parameters for the dashboard.

### Dashboard Configuration Web Part

This Web Part is hidden from end users, who do not have permissions to edit any of the filter parameter values set by the IT administrator. The following figure shows the Dashboard Configuration Web Part.

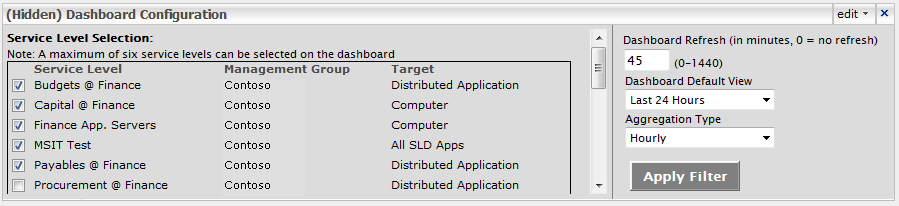


Figure 2. Dashboard Configuration Web Part

The following table lists the parameters of the Dashboard Configuration Web Part and describes their default behavior. All of the filter parameters specified by administrators are captured and stored as site properties in the Windows SharePoint Services Content database. All other Web Parts read the administrator filter values from site properties and use them to filter the metrics data from the Operations Manager Data Warehouse database.

Table 3. Dashboard Configuration Parameters

| **Filter Parameter** | **Functionality** | **Default Value** |
| --- | --- | --- |
| Service Level | Lists all service levels, their management group and target as defined in Operations Manager. | None of the service levels is selected. |
| Dashboard Refresh Rate | The refresh rate for the particular site. | 30 minutes. |
| Dashboard Default View | The default time interval for the particular site. | Last 24 hours |
| Aggregation Type | The default aggregation for the particular site. | Hourly |

To select service levels and set default values in the Service Level Dashboard

1. Open the newly created site, click the **Site Action**s menu, and click **Edit Page**.
2. In the Dashboard Configuration Web Part:
3. From the list of **Service Levels**, select a service level. (You can only select a maximum of six Service Levels per dashboard.)
4. For **Dashboard Refresh Rate**, Specify the value from 0 to 1440 (minutes). The value 0 indicates no refresh.

**Note**   It is recommended that you choose 30 Minutes for the Dashboard Refresh Rate if you choose more than 24 hours for Dashboard Default View.

1. For **Dashboard Default View**, choose a default view from the drop-down list.
2. For **Aggregation Type**, choose **Hourly** or **Daily** from the drop-down list.
3. **Note**   It is recommended that you choose **Daily** for the Aggregation Type if you choose more than 24 hours for **Dashboard Default View**. Click **Apply Filter** to save the settings.

### Verify That the Site Is Functioning Correctly

Verify that the site is functional by sending the site address to one or more users and asking them to confirm that they can access the Service Level Dashboard site. The filters on their pages will reflect the permissions levels that they are assigned. After verifying that users can access the dashboard, you can release the site.

# Creating Additional Service Level Dashboard Sites

Each Service Level Dashboard requires its own SharePoint Web site. You can create additional sites either by creating sub-sites of the initial site or by creating independent sites for each individual dashboard.

If you create sub-sites, you will not have to create multiple URLs. In addition, users who have access to multiple dashboards can view all dashboards in the same browser window in tabbed format and access the sub-sites beneath each.

You may, however, have business reasons for creating independent sites. For example, you may want to create a separate dashboard for each department in your organization.

To create new sites and sub-sites, the administrator needs full control permissions to Windows SharePoint Services.

The following Windows SharePoint Services procedure creates a site or sub-sites.

To create a sub-site for the Service Level Dashboard Site

Creating sub-sites will avoid the hassle of creating and managing multiple URL for each dashboard.

1. In the navigation bar, click **Home**.
2. On the **Site Actions** menu, click **Create**.
3. On the **Create Pages** menu, under Web Pages, click **Sites and Workspaces**.
4. Create a site on the **New SharePoint Site** page, selecting the **Service Level Dashboard** site template in the **Custom** tab of the **Select a template** box.
5. Click **Create**.

To create a Service Level Dashboard site

If your business requirement is to create a new site for every dashboard or if you want to create a new dashboard for different departments (for example HR, Finance etc.) then you should go through this path.

1. From the **Start** menu, open SharePoint 3.0 Central Administration.
2. In the navigation bar, click **Application Management**.
3. On the Application Management page, in the **SharePoint Site Management** section, click **Create site collection**.
4. On the Create Site Collection page, in the **Web Application** section, if the Web application in which you want to create the site collection is not selected, on the **Web Application** menu, click **Change Web Application**, and then, on the **Select Web Application** page, click the Web application in which you want to create the site collection.

**Note** When you create a site collection, you also create the site within that site collection.

1. In the **Title** section, type the title, and in the **Description** section, provide a description for the site collection.
2. In the **Web Site Address section**, under **URL**, select the path to use for your URL (such as an included path like /sites/ or the root directory, /).

If you select a wildcard inclusion path, such as /sites/, you must also type the site name to use in your site's URL.

1. In the **Template Selection** section, in the **Select a template** list, click the custom tab and select the Service Level Dashboard template that you want to use for the top-level site in the site collection.
2. In the **Primary Site Collection Administrator** section, enter the user name (in the form *domain*\*user name*) for the user who will be the site collection administrator.
3. If you want to identify a user as the secondary owner of the new top-level Web site (which is recommended), in the **Secondary Site Collection Administrator** section, enter the user name for the secondary administrator of the site collection.
4. If you are using quotas to limit resource use for site collections, in the **Quota** **Template** section, in the **Select a quota template** list, click a template.
5. Click **OK**.

For information about how to perform this procedure using a command-line tool, see [Createsite: Stsadm operation (Windows SharePoint Services)](http://technet.microsoft.com/en-us/library/cc287992.aspx).

# **Viewing the Service Level Dashboard**

After a Service Level Dashboard site has been created and configured, users who have the required permissions can view information on the dashboard. This section of the guide briefly describes the dashboard user interface (UI) and provides more detail about the dashboard filters that control the data rendered on the dashboard. The following screenshot of a sample Service Level Dashboard identifies the five separate Web Parts that display service level metrics.

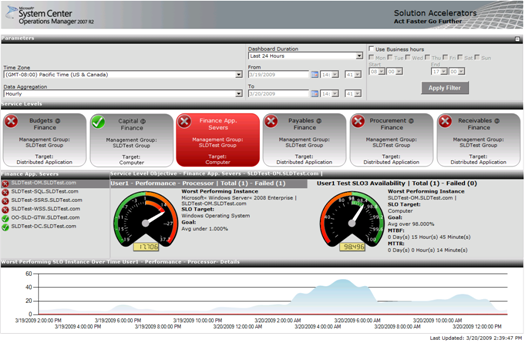


Figure 3. Service Level Dashboard UI with Metrics for Six Service Levels

The Service Level Dashboard uses five separate Web Parts to display service level metrics and filters. The reported data reflects default filter values that were selected by the IT administrator in the Dashboard Configuration Web Part, which is visible only to administrators and is not shown in this figure.

The Web Parts of the Service Level Dashboard that are visible to users are:

* Parameters
* Service Levels
* Selected Service Level SLOs
* Service Level Objective
* Worst Performing SLO Instance Over Time

These Web parts are interrelated, so that the selection of objects or filters for each Web Part affects the data that is displayed on Web parts below it on the list. For example, if, in the Service Levels Web Part shown in Figure 3, you select Capital@Finance instead of the default selection, Finance App. Servers, the target instances shown in the Service level target Web Part change to reflect the instances that are being tracked for Capital@Finance.

## Parameters Web Part

SLDV2-Parameters Web Part.png

Figure 4. Parameters Web Part

The Parameters Web Part allows users to filter or change the data rendered on the dashboard by selecting values for four time parameters that apply to the service level metrics reported on a particular dashboard. When you change the filter values and then click the **Apply Filter** button, the data displayed on the dashboard changes to reflect your filter selection.

**Note** The filter value changes you make in all Web Parts persist only for your current session and do not affect the default view that others see when they access the site.

The following table describes the four filter parameters.

Table 4. Values for Parameters Web Part

| **Filter Parameter** | **Functionality** | **Default Values** |
| --- | --- | --- |
| Time Zone | Filter by time zone | Server time zone |
| Aggregation Method | Specify how frequently (Hourly or Daily) to aggregate data.  If the selected value for the Dashboard Time Period filter is Last 60 Minutes, the Aggregation Method parameter is disabled. | Selection made in Dashboard Configuration Web Part |
| Dashboard Time Period | Specify which time period to display on the dashboard | Selection made in Dashboard Configuration Web Part |
| Use Business Hours | Specify the business hours you want to track.  This parameter is available only when you choose Hourly for the Aggregation Method. | Use Business Hours option is not selected by default |

**Note**   It is recommended to choose Daily for the Aggregation Method if you choose more than 24 hours for the Dashboard Time Period.

## Service Levels Web Part



Figure 5. Service Levels Web Part

The Service Levels Web Part identifies the specific applications, groups, or class of objects for which service level metrics are available on this particular dashboard. Each is referred to as a service level and is displayed as a tile.

Typically, the service levels chosen for a dashboard are intended to meet the needs of a specific audience. For example, users who are interested in Finance Receivables might want to track service levels for applications that are used for setting up new accounts and tracking invoices. Depending on the size of the organization, a separate service level dashboard might be created for a subset of Finance functions, such as procurement.

The IT administrator can configure —and the Service Level Dashboard can display—a maximum of six service levels per dashboard. The tracked service levels are displayed in alphabetical order based on their display names. By default the worst performing service level is selected automatically when a user visits the site. When a service level is selected, the entire tile changes to red or green.

The data in the three Web Parts located underneath the Service Levels Web Part reflect the service level that is selected in the Service Levels Web Part. When you click a different service level tile to select it, the related Web Parts update accordingly.

The service level displays green or red icons in the upper left corner to indicate its current state.

**greenselectedGreen state**. Denotes that all of the SLOs in all of the service level’s managed entities are meeting the target goals.

**Red state**. Denotes that one or more of the SLOs in any of the service level’s managed entities is not meeting the target goal.

## Selected Service Level Targets Web Part

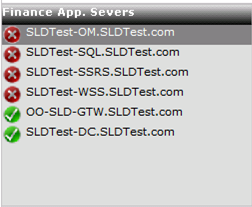


Figure 6. Selected Service Level Targets Web Part

The Selected Service Level Targets Web Part shows the display names of the instances for the service level selected. (Note that the name of the Web Part that displays on the screen will reflect the actual service level selected.) By default the worst performing instance is at the top of the list and is selected automatically. However, users can select which instance to view.

The instances display green or red icons to indicate their state.

greenselected**Green state**. Denotes that all of the service level instance’s SLOs are meeting their target goals.

**Red state**. Denotes that one or more of the service level instance’s SLOs is not meeting its target goal.

## Service Level Objective Web Part



Figure 7. Service Level Objective Web Part

The Service Level Objective Web Part displays SLOs for the selected service level instance in the ascending order of performance, with the worst performing displayed first. To select a different SLO, click the SLO name in this Web Part. The dashboard uses Dundas Gauges to display actual values and to indicate whether service level goals are met. Each SLO can have single or multiple instances.

### Components Description

The following list describes the different values presented on this Web Part:

* **Green scale on the gauge**. The pointer points to the green scale when all of the SLO instances are meeting their target goals.
* **Red scale on the gauge.** The pointer points to the red scale when one or more of the SLO instances is not meeting its target goal.
* **SLO name**. The name of the SLO as defined in the Operations Manager Service Level Tracking feature.
* **Goal**. This metric indicates the target that the SLO strives to meet.
* **Actual**. This metric (displayed in the box below the gauge) indicates the current value of the SLO. The value can be a percentage or an absolute number, depending on the SLO type.
* **Total**. This is the total number of instances for which the SLO is defined.
* **Failed**. This is the total number of failed instances of the defined SLO.
* **MTTR**. The **m**ean **t**ime **t**o **r**epair (MTTR) is the average time that an application or group takes to recover from any failure.

**Note**   The dashboard uses the following calculation formula:   
MTTR = Total downtime / total number of failures.

* **MTBF**. The **m**ean **t**ime **b**etween **f**ailures (MTBF) is the average time between failures for the application or group.

**Note**   When an SLO has more than one instance, the worst performing SLO’s actual MTTR and MTBF values appear.

### Uptime and Downtime Calculations

Based on the SLO configuration in Operations Manager, the states that account for uptime and downtime of the application, group, or class of objects include the following.

* Unplanned Maintenance
* Unmonitored
* Monitoring unavailable
* Monitor disabled
* Planned Maintenance
* Warning

When the Use Business Hours filter is chosen in the Parameters Web Part, the dashboard calculates the uptime, downtime and total number of failures for selected business hour time interval only. If the application is down at the start of business hours, that counts as a failure point towards total number of failures. If the application is down at the end of business hours for the day and is still down at the start of the business on the following day, this circumstance is counted as a single failure in the total number of failures. If the application was restored and failed again multiple times during non-business hours, those failures are not counted toward the total number of failures.

## Worst Performing SLO over Time Web Part

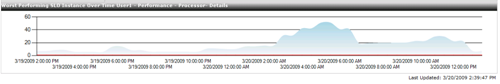


Figure 8. Worst Performing SLO over Time Web Part

This Web Part displays the actual value of the SLO over a specified period based on the aggregation options. The graph is generated based on the Dashboard Time Period parameter and, by default, displays the worst performing SLO. When you change the SLO in the Service Level Objective Web Part, this graph updates based on your selection.

# **References**

The following list includes the additional resources to which this guide refers.

## Windows SharePoint Services 3.0 SP1

[About security features of Windows SharePoint Services 3.0](http://office.microsoft.com/en-us/sharepointtechnology/HA100215781033.aspx)  
 at http://office.microsoft.com/en-us/sharepointtechnology/HA100215781033.aspx

[Createsite: Stsadm operation](http://technet.microsoft.com/en-us/library/cc287992.aspx)   
at http://technet.microsoft.com/en-us/library/cc287992.aspx

[Default permissions and permission levels](http://technet.microsoft.com/en-us/library/cc287818.aspx)

at http://technet.microsoft.com/en-us/library/cc287818.aspx

[Deployment for Windows SharePoint Services 3.0 technology](http://technet.microsoft.com/en-us/library/cc287737.aspx)

at http://technet.microsoft.com/en-us/library/cc287737.aspx

[Determine organization and user needs](http://technet.microsoft.com/en-us/library/cc287919.aspx)  
at http://technet.microsoft.com/en-us/library/cc287919.aspx

[Determine permission levels and groups to use](Determine%20permission%20levels%20and%20groups%20to%20use)   
at http://technet.microsoft.com/en-us/library/cc287625.aspx

[Downloadable book: Installation guide](http://technet.microsoft.com/en-us/library/cc288653.aspx)

at http://technet.microsoft.com/en-us/library/cc288653.aspx

[Enable access for end users](http://technet.microsoft.com/en-us/library/cc287822.aspx)

at <http://technet.microsoft.com/en-us/library/cc287822.aspx>

## Operations Manager 2007

[Deploying Operations Manager 2007 Scenarios](http://technet.microsoft.com/en-us/library/bb432137.aspx)   
at http://technet.microsoft.com/en-us/library/bb432137.aspx

[Getting Started with Operations Manager 2007](http://technet.microsoft.com/en-us/library/bb309673.aspx)   
at http://technet.microsoft.com/en-us/library/bb309673.aspx

[Operations Manager 2007 Key Concepts Guide](http://technet.microsoft.com/en-us/library/bb977442.aspx)   
at http://technet.microsoft.com/en-us/library/bb977442.aspx

[Operations Manager 2007 R2 Beta Highlights guide](http://go.microsoft.com/fwlink/?LinkID=79804)  
on Microsoft Connect at http://go.microsoft.com/fwlink/?LinkID=79804

[Microsoft Operations Framework 4.0](http://technet.microsoft.com/en-us/library/cc506049.aspx)  
at http://technet.microsoft.com/en-us/library/cc506049.aspx

## .NET Framework

[Microsoft .NET Framework 3.0](http://www.microsoft.com/downloads/details.aspx?FamilyID=333325fd-ae52-4e35-b531-508d977d32a6&DisplayLang=en) at

at http://www.microsoft.com/downloads/details.aspx?FamilyID=333325fd-ae52-4e35-b531-508d977d32a6&DisplayLang=en

# **Appendix: Sample Scenarios**

## Scenario 1: Creating a Service Level Dashboard for a Distributed Application

Jeff Smith requests a dashboard to monitor his MyBIPortal Application. In his request, Jeff indicates that all users who belong to the MyBIPortal Application Owners group need access to the dashboard. The dashboard should auto-refresh every five minutes, provide daily aggregation of the data, and display data for the past seven days. The specific areas that Jeff wants to monitor are availability (99.99 percent uptime) and performance (80 percent processor time on average.)

The IT administrator used the following procedure to define an SLO that meets Jeff’s requirements.

To define an SLO for an application

1. In the Operations console, from the Authoring view, click **Management Pack Objects** and then, in the Authoring navigation tree, click **Service Level Tracking**.
2. In the Actions pane, click **Create**.
3. In the **Name** box, type **MyBIPortal**. You can optionally provide a description. Click **Next**.
4. Under **Targeted class**, click **Select** to specify the class for the service level, and then click **Distributed Application**.
5. You can narrow the service level using the **Scope** option. The default value is to use all objects of the targeted class.
6. Select the management pack where this service level will be saved. You can use an existing management pack or create a new one.
7. Click **Next**.
8. On the Service Level Objectives page, click **Add** and then click **Monitor state SLO** to create a new monitor to track the availability of the application.
9. Define the state monitor as follows:
10. In the **Name** box, type **Availability SLO App Test**.
11. Under **Targeted class**, click **Select** to specify the class for the service level, and then select **Distributed Application**.
12. Under **Monitor**, click **Availability**.
13. For **Service level objective goal**, provide the numerical measure for your objective. Type **99.990** to indicate that your goal is 99.99 percent availability.
14. To refine what the monitor tracks as available, select or clear any of the following state criteria to be counted as downtime:

* Unplanned maintenance
* Unmonitored
* Monitoring unavailable
* Monitor disabled
* Planned maintenance
* Warning

1. Click **OK**.
2. On the Service Level Objectives page, click **Add** and then click **Performance rule SLO** to create a new collection rule to track the performance of the application.
3. Define the performance collection rule as follows:
4. In the **Name** box, type **Performance SLO App Test**.
5. Under **Target class**, select **Windows Operating System.**

**Note**   This class must be contained in the distributed application.

1. Specify the performance collection rule to use. For this scenario, choose **Collect Processor\ % Processor Time performance counter**.
2. Choose one of the following aggregation methods:

* Average
* Min
* Max

1. To define the SLO goal, choose either **Less than** or **More than** and enter a value. For this scenario, choose **Less than** and **80**. This indicates that the performance goal is to never exceed 80 percent processor time.
2. Click **OK**.
3. On the Service Level Objectives page, click **Next**.
4. Review the summary, and then click **Finish**.
5. On the Completion page, click **Close**.

To validate the creation of the service level objective

* In the Service Level Tracking pane, select the new service level, and then, in the Action pane, click **Properties**.

To create a service level dashboard based on Jeff’s request

1. Create a new site for MyBIPortal using the Application Management page, in the **SharePoint Site Management** section.
2. Assign permissions to MyBIPortal Application Owner Group.
3. To configure the newly created site, click the **Site action** menu and then click **Edit** **Page**.
4. In the Dashboard Configuration Web Part:
5. From the list of Service Levels, select **MyBIPortal**.
6. For Dashboard Refresh Rate, choose **5 minutes**.
7. For Dashboard Default View, choose **7 days**.
8. For Aggregation Type, choose **Daily**.
9. Click **Apply Filter** to save the settings.
10. Click **Exit Edit Page**.
11. Validate the new site creating by accessing it from the browser.

## Scenario 2: Creating a Service Level Dashboard for a Group

Sanjay Jacob requests a dashboard to monitor his Front-End Servers group. In his request, Sanjay indicates that all users who belong to the IT Pros group need access to the dashboard. The dashboard should auto-refresh every two minutes, provide hourly aggregation of the data, and display data for the last 24 hours. The specific areas that Sanjay wants to monitor are availability (99.99 percent uptime) and performance (80 percent processor time on average).

The IT administrator used the following procedure to define an SLO that meets Sanjay requirements.

To define an SLO for a group

1. In the Operations console, from the Authoring view, click **Management Pack Objects** and then, in the **Authoring** navigation tree, click **Service Level Tracking**.
2. In the Actions pane, click **Create**.
3. In the **Name** box, type **Front-End Servers**. You can optionally provide a description. Click **Next**.
4. Under **Targeted class**, click **Select** to specify the class for the service level, and then click **Computer**.
5. You can narrow the service level using the **Scope** option. The default value is to use all objects of the targeted class.
6. Select the management pack where this service level will be saved. You can use an existing management pack or create a new one.
7. Click **Next**.
8. On the Service Level Objectives page, click **Add** and then click **Monitor state SLO** to create a new monitor. This monitor tracks the availability of the application.
9. Define the state monitor as follows:
10. In the **Name** box, type **Availability SLO Group Test**.
11. Under **Targeted class**, click **Select** to specify the class for the service level, and then select **Computer**.
12. Under **Monitor**, choose the specific monitor that you want to use to measure the objective. For this scenario, choose **Availability**.
13. For **Service level objective goal**, provide the numerical measure for your objective. Type **99.990** to indicate that your goal is 99.99 percent availability.
14. You can refine what the monitor tracks as available by selecting or clearing any of the following state criteria to be counted as downtime:

* Unplanned maintenance
* Unmonitored
* Monitoring unavailable
* Monitor disabled
* Planned maintenance
* Warning

1. Click **OK**.
2. On the Service Level Objectives page, click **Add** and then click **Performance rule** **SLO** to create a new collection rule. This rule tracks the performance of the application
3. Define the performance collection rule as follows:
4. In the **Name** box, type **Performance SLO Group Test**.
5. Under **Target class**, select **Windows Operating System**.

**Note**This class must be contained in the distributed application.

1. Specify the performance collection rule to use. For this scenario, choose **Collect** **Processor\ % Processor Time performance counter**.
2. Choose one of the following aggregation methods:

* Average
* Min
* Max

1. Define the SLO goal by choosing either **Less than** or **More than** and entering a value. For this scenario, choose **Less than** and **80**. This indicates that the performance goal is to never exceed 80 percent processor time.
2. Click **OK**.
3. On the Service Level Objectives page, click **Next**.
4. Review the summary and click **Finish**.
5. On the Completion page, click **Close**.

To validate the creation of the service level objective

* In the Service Level Tracking pane, select the new service level and then, in the Action pane, click **Properties**.

To create a service level dashboard based on Sanjay’s request

1. Create a new site for MyBIPortal using the Application Management page, in the **SharePoint Site Management** section
2. Assign permission to the IT Pros group.
3. To configure the newly created site, on **Site action** menu, click **Edit Page**.
4. In the Dashboard Configuration Web Part:
5. From the list of **Service Levels**, select **Front-End Servers**.
6. For **Dashboard Refresh Rate**, choose **2 minutes**.
7. For **Dashboard Default View**, choose **24 hours**.
8. For **Aggregation Type**, choose **Hourly**.
9. Click **Apply Filter** to save the settings.
10. Click **Exit Edit Page**.
11. Validate the new site creating by accessing it from the browser.

**Note**   Any users who are in the MyBIPortal Application Owners group and IT Pros group will be able to access both dashboards as multiple tabs in the same browser. For those users who are interested in viewing MyBIPortal Application and Front-End Servers group on a single dashboard, create a new site by selecting both the service levels.

## Scenario 3: Translating Service level targets into SLOs

The following procedure uses an example to show how to reconfigure service level targets for availability (to 98 percent) and performance (to 95 percent) for a distributed application called Application1.

To translate existing service level targets for Availability and Performance to SLOs

1. In the Operations console, from the Authoring view, click **Management Pack Objects**, and then, in the Authoring navigation tree, click **Service** **Level** **Tracking**.
2. In the Actions pane, click **Create**.
3. In the **Name** box, type **Application1**. You can optionally provide a description. Click **Next**.
4. Under **Targeted class**, click **Select** to specify the class for the service level, and then click **Distributed Application**.
5. You can narrow the service level using the **Scope** option. The default value is to use all objects of the targeted class.
6. Select the management pack where this service level will be saved. You can use an existing management pack or create a new one. Click **Next**.
7. On the Service Level Objectives page, click **Add**, and then click **Monitor state** to create a new monitor to track the availability of the application.
8. Define the state monitor as follows:
9. In the **Name** box, type **Application1 Availability SLO**.
10. Under **Monitor**, click **Availability**.
11. Under **Service level objective goal**, provide the numerical measure for the objective. Type **98** to indicate that the goal is 98 percent availability.
12. To refine what the monitor tracks as available, select or clear any of the following state criteria:

* Unplanned maintenance
* Unmonitored
* Monitoring unavailable
* Monitor disabled
* Planned maintenance
* Warning

1. Click **OK**.
2. On the Service Level Objectives page, click **Add**, and then click **Monitor state** to create a new monitor to track the performance of the application.
3. Define the state monitor as follows:
4. In the **Name** box, type **Application1 Performance SLO**.
5. Under **Monitor**, click **Availability**.
6. Under **Service level objective goal**, provide the numerical measure for the objective. Type **95** to indicate that the goal is 95 percent.
7. To refine what the monitor tracks as available, select **Warning**, and then select or clear any of the following state criteria:

* Unplanned maintenance
* Unmonitored
* Monitoring unavailable
* Monitor disabled
* Planned maintenance

1. Click **OK**.
2. On the Service Level Objectives page, click **Next**.
3. Review the summary, and then click **Finish**.
4. On the Completion page, click **Close**.

To validate the creation of the service level objective

* In the Service Level Tracking pane, select the new service level, and then, in the Action pane, click **Properties** to verify the SLOs are present.

# **Acknowledgements**

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# Feedback

Please direct questions and comments about the Service Level Dashboard to [satfdbk@microsoft.com](mailto:satfdbk@microsoft.com?subject=Service%20Level%20Dashboard%202.0%20).