



HarePoint Workflow Monitor

For Microsoft SharePoint Server 2010 and SharePoint Foundation 2010.



Product version 1.0

February 8, 2012

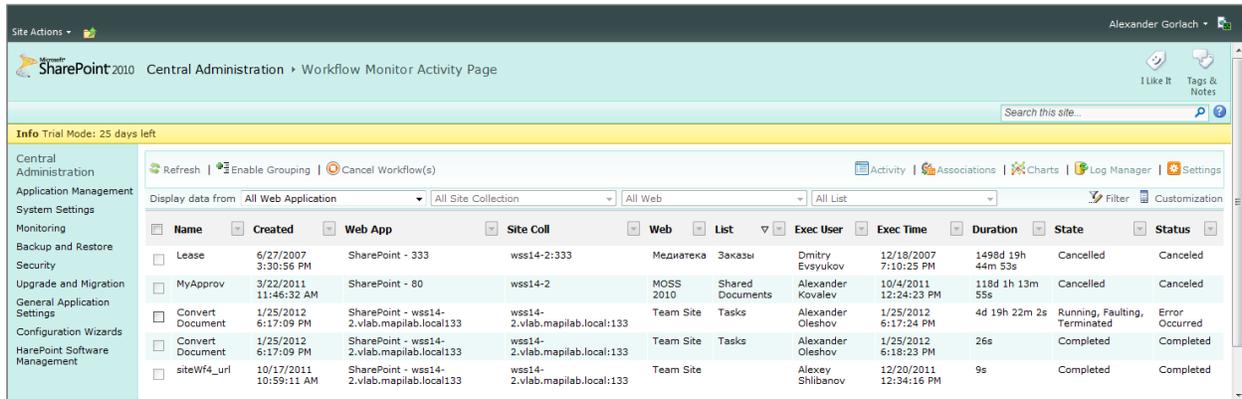
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I. Introduction

According to the research made by Global360, about 70% of organizations that deployed SharePoint use workflows. In large organizations the number of simultaneously executed workflows can run into thousands. And very often these organizations are faced with the problem of monitoring workflows, at which solution this product is aimed.



The screenshot displays the HarePoint Workflow Monitor interface within a SharePoint 2010 environment. The interface includes a navigation sidebar on the left, a top navigation bar with 'SharePoint 2010 Central Administration > Workflow Monitor Activity Page', and a main content area. The main area features a table of workflow instances with columns for Name, Created, Web App, Site Coll, Web, List, Exec User, Exec Time, Duration, State, and Status. The table contains five rows of data, including workflows like 'Lease', 'MyApprov', and 'Convert Document'.

Name	Created	Web App	Site Coll	Web	List	Exec User	Exec Time	Duration	State	Status
Lease	6/27/2007 3:30:56 PM	SharePoint - 333	wss14-2:333	Медиатека	Заказы	Dmitry Evyukov	12/18/2007 7:10:25 PM	1498d 19h 44m 53s	Cancelled	Canceled
MyApprov	3/22/2011 11:46:32 AM	SharePoint - 80	wss14-2	MOSS 2010	Shared Documents	Alexander Kovalev	10/4/2011 12:24:23 PM	118d 1h 13m 55s	Cancelled	Canceled
Convert Document	1/25/2012 6:17:09 PM	SharePoint - wss14-2.vlab.mapilab.local:133	wss14-2.vlab.mapilab.local:133	Team Site	Tasks	Alexander Oleshov	1/25/2012 6:17:24 PM	4d 19h 22m 2s	Running, Faulting, Terminated	Error Occurred
Convert Document	1/25/2012 6:17:09 PM	SharePoint - wss14-2.vlab.mapilab.local:133	wss14-2.vlab.mapilab.local:133	Team Site	Tasks	Alexander Oleshov	1/25/2012 6:18:23 PM	26s	Completed	Completed
siteWf4_url	10/17/2011 10:59:11 AM	SharePoint - wss14-2.vlab.mapilab.local:133	wss14-2.vlab.mapilab.local:133	Team Site		Alexey Shibanov	12/20/2011 12:34:16 PM	9s	Completed	Completed

HarePoint Workflow Monitor will help to solve the following tasks:

1. **Overview.** Using the product, administrators can quickly view all workflows and all active instances of workflows at the level of a farm, site collection, site, or list.
2. **Errors.** With the help of filters, even among thousands of workflows, you can see all the workflows finished with a certain status in two clicks.
3. **Freezes.** Some workflows are executed on a farm for years. Sometimes such workflows can be identified and stopped only using this product. The search of such processes can seriously help in detecting errors in workflow algorithms.
4. **Singularities.** With the help of charts of the product, you can easily identify abnormal activity. For example, the increased number of running workflows or workflows finished with errors.

HarePoint Workflow Monitor – the world's only product that can give a clear understanding of what is really going on with workflows in complex and large-scale environments.

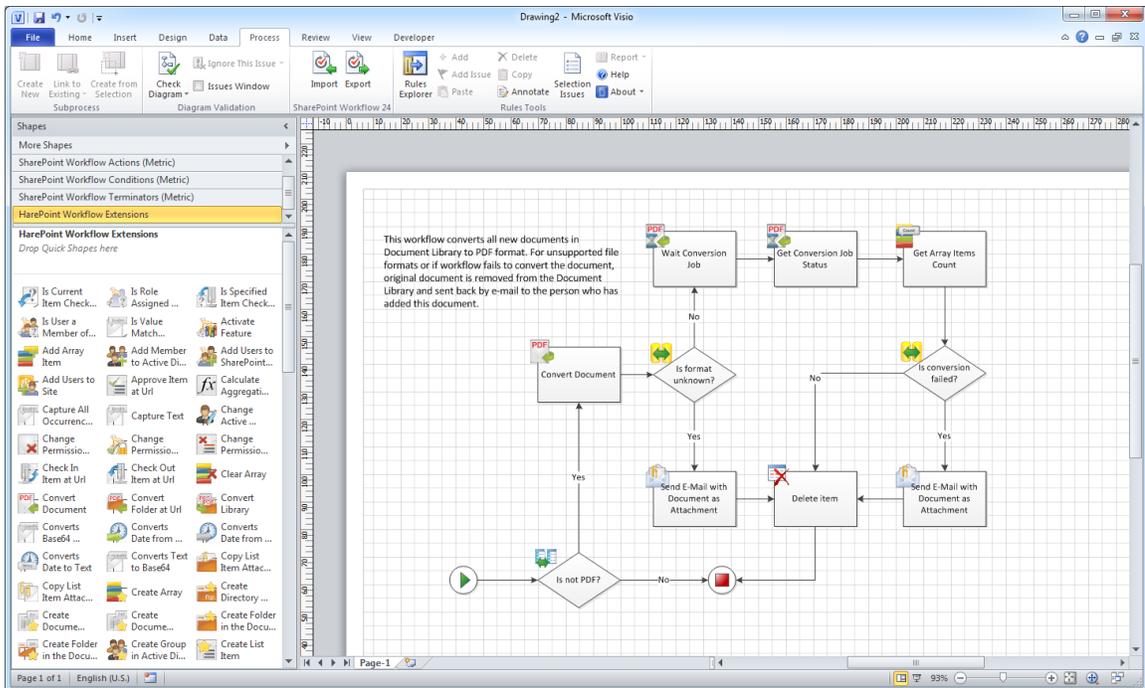
We also recommend you to pay attention to the following products of our company:

- **HarePoint Workflow Scheduler for SharePoint 2010** is a free software product that allows automatic execution of SharePoint workflows by schedule. With its help, you can automate recurring business processes, debug your workflows with various sets of parameters, test server's performance by starting workflows with specified frequency.

The product supports declarative workflows (created in Microsoft SharePoint Designer) and Visual Studio workflows. It supports both site and list workflows and allows launching workflow for every document or list item, for manually selected item or for items selected by CAML query. HarePoint Workflow Scheduler is fully compatible with InfoPath, and has the option to pass pre-defined parameters.

Task Name	Enabled	Workflow Name	List Name	Triggers
Generate Invoices	Yes	GenerateInvoice	Orders	At 45 minute every hour
Update Profiles	Yes	UpdateProfile		At 3:30 AM every day
Run now	No	ConvertDocs	Docs	At 30 minute every 3 hours
Disable	Yes	Report	Orders	At Mon in 12:10 AM every week
View Item	Yes	Report	Orders	At 1st day 5:46 PM every month
Edit Item	No	Convertimages	Photos	At 10/19/2011 12:30 AM
Alert Me	Yes	Reminder		At 8:30 AM every day
Manage Permissions	Yes	Report	Orders	At 10/10/2011 5:50 PM
Delete Item	Yes	Report	Orders	At 10/10/2011 5:50 PM
+ Add new item				

- HarePoint Workflow Extensions for SharePoint 2010** provides over 180 new 'ready-to-use' activities for SharePoint workflow development. The product is fully supported by all Microsoft workflow development tools and there is no need to migrate and adapt current workflows to a new development environment, or to master and deploy new development tools. You can benefit from the power of the product in SharePoint Designer 2010, Microsoft Visual Studio 2010, and in Microsoft Visio 2010.



You will find the information on these products, as well as trial versions at www.harepoint.com.

II. Deployment

1. System requirements

HarePoint Workflow Monitor is designed to operate in:

- Microsoft SharePoint Server 2010,
- SharePoint Foundation 2010

(hereinafter referred to as SharePoint) environments.

The Product has no special requirements to operating system and its components, RAM memory space and CPU type. The Product may operate at any configurations where SharePoint is deployed; it requires 10 Mb of disk space on each SharePoint server.

2. Licensing and trial limitations

HarePoint Workflow Monitor is licensed for a number of SharePoint Web Front-End Servers or where “Microsoft SharePoint Web Application” service is running. The number of licenses should correspond to a number of servers. A list of services installed on the server can be viewed by opening System Settings tab and clicking the link “Manage servers in this farm” on Central Administration site.

You may use the Product on the basis of one of two licenses:

1. **Trial License.** Provided automatically for a 30-day period to use the Product in organization’s environment without any limitations of Product functionality.
2. **Commercial License.** This license is purchased for a number of SharePoint Servers and allows using the Product in the organization’s environment without limitation by usage time and functionality.

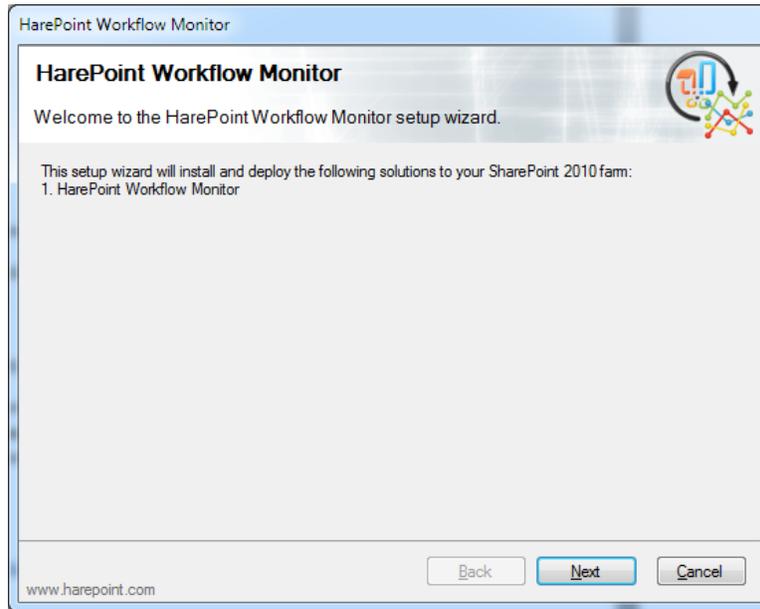
Note that after purchasing of Commercial License and entering registration keys at the product settings product becomes fully functional.

See product page at <http://www.harepoint.com/> for more details about Product licensing.

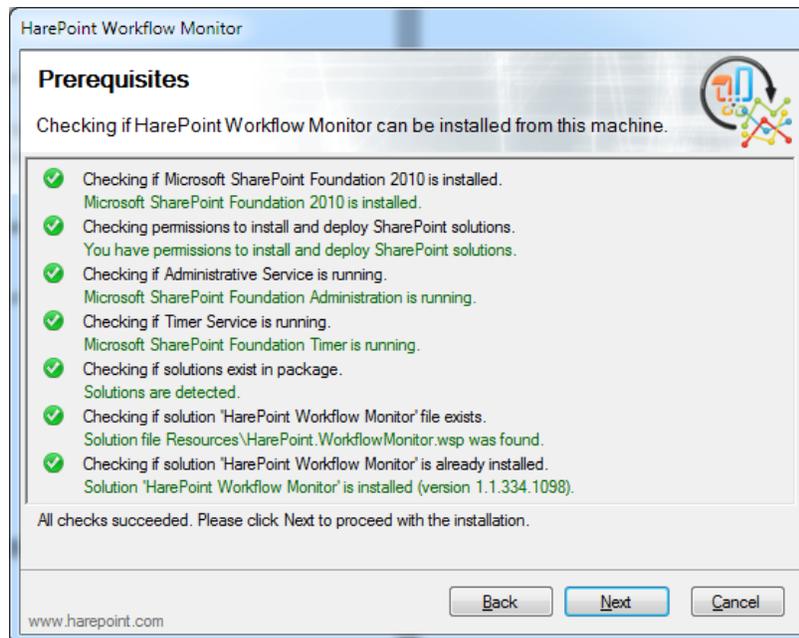
3. Installing HarePoint Workflow Monitor

To install the product you'll need Farm Administrator rights.

Please access any WFE server of the SharePoint farm, unpack the product archive into a folder on the local disk and run the Installation Wizard (**SETUP.EXE**).

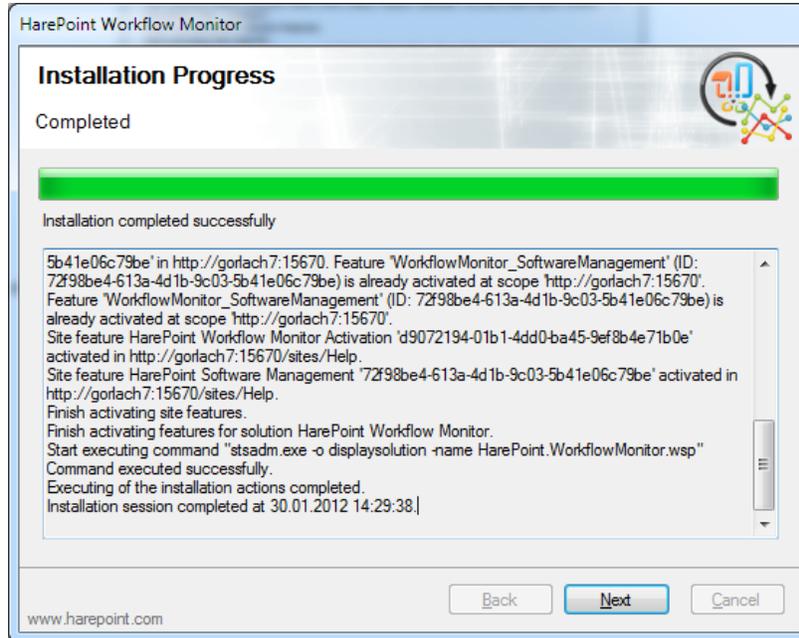


Press Next button on the wizard's welcome screen and the wizard will check if the product can be installed:



Should any problems be detected, please rectify them and restart the installation wizard.

At the next step of the Wizard, you should apply the License and follow the instructions of the Wizard to complete installation:



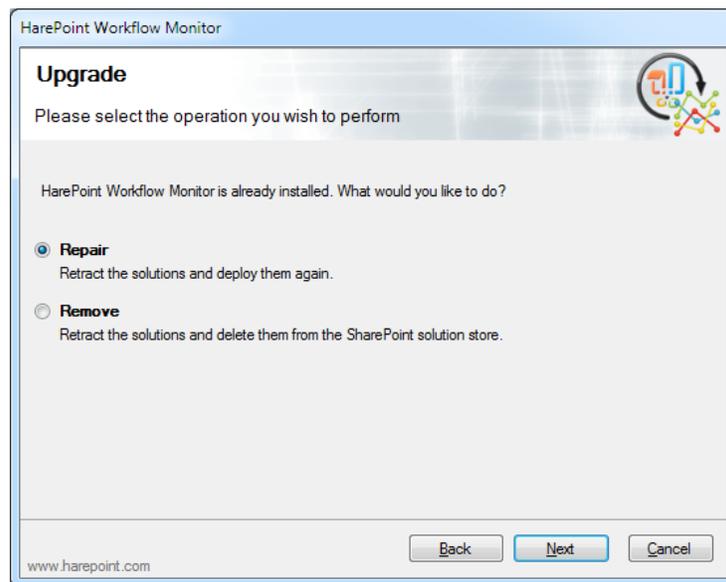
After installation the Product is ready to work. See the Section III of this manual for the Product overview.

4. How to repair, upgrade or remove the Product

To repair, upgrade or remove the product you'll need Farm Administrator rights.

Please enter any WFE server of the SharePoint farm, unpack the product archive into a folder on the local disk and run the Installation Wizard (**SETUP.EXE**).

Following instructions of the Wizard, pass system check step similar to those during the product installation (see chapter 3). Upon completing these steps the Wizard will ask to repair, upgrade or remove the product components.



Select the required type of operation and follow the further instructions of the Wizard.

III. Product Overview

1. Getting started

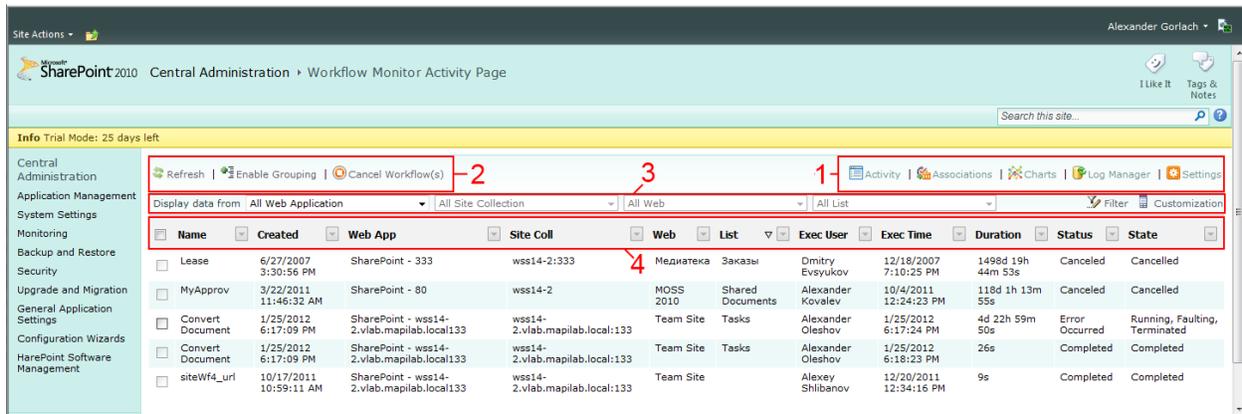


To work with the product you must have the rights of a farm administrator. This limitation is due to the fact that some of the data are received by the product in real time from the current user account, and access to these data under the rights of lower level is impossible.

After the product installation it is completely ready to work. Open website Central Administration. In section "HarePoint Software Management" click "HarePoint Workflow Monitor". This will take you to the page with address:

<http://CentralAdmin/admin/HarePoint/WFMAActivity.aspx>

The whole work with the program, including its configuration, is performed on this page.



In the figure above:

1. Panel for switching product sections.
2. Panel of the current section buttons.
3. Filters used for data sampling.
4. Filters used for data displaying.

During the first visit to the product page you'll find the window offering you to import data from the workflow history lists into the internal product database. As well as the proposal to switch on jobs to import logs automatically. You can also do this later



by going to section **Log Manager** of the product.

Product sections:

1. **Activity**. Displays the table with a list of workflow instances that have been recently active (see chapter 3.1 of this Manual).
2. **Associations**. Displays a list of associations of all farm workflows with summary data on the number of running instances (see chapter 3.2).
3. **Charts**. Displays charts of the total number of running workflow instances completed successfully, completed with an error, cancelled (see chapter 3.3) for the selected period. Data for the charts are collected from workflow history lists.
4. **Log Manager**. Displays the status of collecting and accumulating data for the charts, the volume of accumulated data and provides the opportunities for manual data collection control (see chapter 3.4).
5. **Settings**. This section defines all the product settings (see the next chapter).

Thus, the product can be conditionally divided into two parts. The first one displays data on existing workflows and their activities in sections **Activity** and **Associations**. All these data are received by the product from the SharePoint database.

The second part of the product accumulates historical data for plotting charts in its tables, using history of the workflows as a source. The control of data accumulation is performed in section **Log Manager**, while historical data are displayed in section **Charts**.

2. Product settings

Go to section **Settings** on the product page on website Central Administration to get access to the settings:



Import Job Settings. Specify how often HarePoint Workflow Monitor will import workflow history data that is used to display charts. Set in minutes. You can also change this setting by going to Central Administration \ Monitoring \ Timer Jobs \ Review job definitions and opening job properties named "HarePoint Workflow Monitor Minutely Import Job".

Log Settings. Specify the number of records to be stored in lists that holds historical workflow execution data. In section Charts a chart, depending on the selected time range, is plotted daily, hourly or, if you have selected the range of up to 12 hours, minutely. If you have specified the storing of 6000 minutely records, then a minutely chart can be plotted (60*100) for the last 100 hours (just over four days). If you have specified the storing of 4800 hourly records, then an hourly chart can be plotted (24*200) for the last 200 days.

Logs Settings

Specify number of records to store in lists that holds historical workflow execution data.

<input type="text" value="5000"/>	minutely records
<input type="text" value="5000"/>	hourly records
<input type="text" value="5000"/>	daily records

By default, data collection for hourly and daily tables is launched every hour and every day, respectively. Since data collection from the hourly table is based on the minutely table, and data collection for the daily table is based on the hourly table (and not on workflow logs), then the execution of data collection has no influence on the performance.

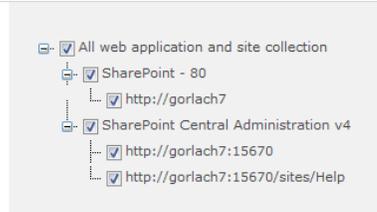
However, you can change the schedule of data collection by going to Central Administration \ Monitoring \ Timer Jobs \ Review job definitions and opening job properties named "HarePoint Workflow Monitor Hourly Import Job" and "HarePoint Workflow Monitor Daily Import Job".

Data Collection. Specify the web-applications and site collections from which data will be collected to internal tables of the product used for plotting charts in section Charts.

Note that these settings do not affect the displaying of workflows in sections Activity and Associations.

Data Collection

Specify web applications and site collections to collect workflow history data from.



Activity Settings. Activity section displays a list of workflows that are started and/or completed within the specified number of minutes. Also you can specify the maximum number of workflows to display and number of workflows per page. If the number of workflows exceeds the maximum number of workflows for displaying, you will see the workflows with the most late-time activity.

Activity Settings

Activity section displays a list of workflows that are started and/or completed within the specified number of minutes. Also you can specify the maximum number of workflows to display and number of workflows per page.

Show workflows completed within	<input type="text" value="600"/>	minutes
Show workflows started within	<input type="text" value="600"/>	minutes
Maximum number of workflows to display	<input type="text" value="10000"/>	
Workflows per page	<input type="text" value="100"/>	

Associations Settings. Specify the maximum number of workflow associations to be displayed and the number of workflow associations per page.

Associations Settings

Specify the maximum number of workflow associations to display and number of workflow associations per page.

Maximum number of associations to display	<input type="text" value="10000"/>
Associations per page	<input type="text" value="100"/>

Time Zone. Since different sites may have different settings of the time zone, then to display charts, starting time of workflows and other dates/time, all values are brought to the selected time zone.

Time Zone

Specify time zone that will be used by HarePoint Workflow Monitor to display charts.

Reset and Purge logs. Clicking on the link in this section brings up a window asking you to confirm the removal of all data accumulated by the program for displaying charts.

Licenses. If you have product license, please enter the license code in “Licenses” section. This section also describes the type of your current license and in case of Trial License, the number of days left to its expiration:

Licenses

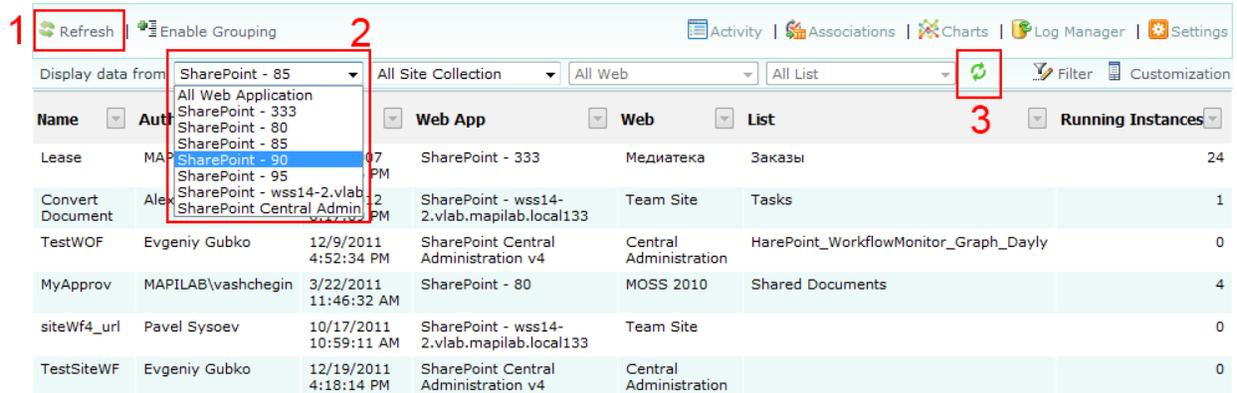
Specify license keys for each SharePoint server where HarePoint Workflow Monitor is installed.

This is trial version of HarePoint Workflow Monitor (25 days left)
You need a license for 1 server.

After entering the license key, the product trial version becomes fully functional.

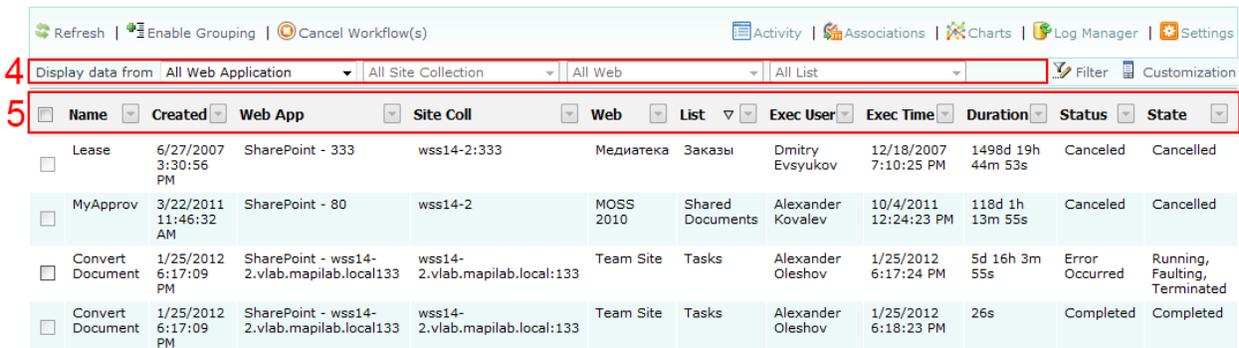
3. Working with the Product

Most of the elements of the product interface are designed to retrieve data for displaying. At the same time switching the controls does not automatically update data. For data reload there is button Refresh (1) in the upper left corner in all sections:



After changing, for example, the filter of data sampling (2), a green icon appears in the filter line (3), indicating that the displayed data do not match the current filter settings and they need to be updated manually by clicking Refresh (3).

Filters of data sampling allow you to switch the context of the displayed data from the entire farm to a specific list. To get to a particular list, you must consistently from left to right choose Web Application, Site Collection, Site, and then the list. If the selection of the list is unavailable at the selected site, it means that this site has no lists.



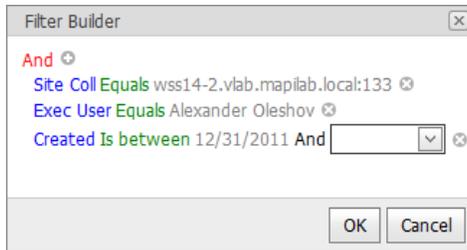
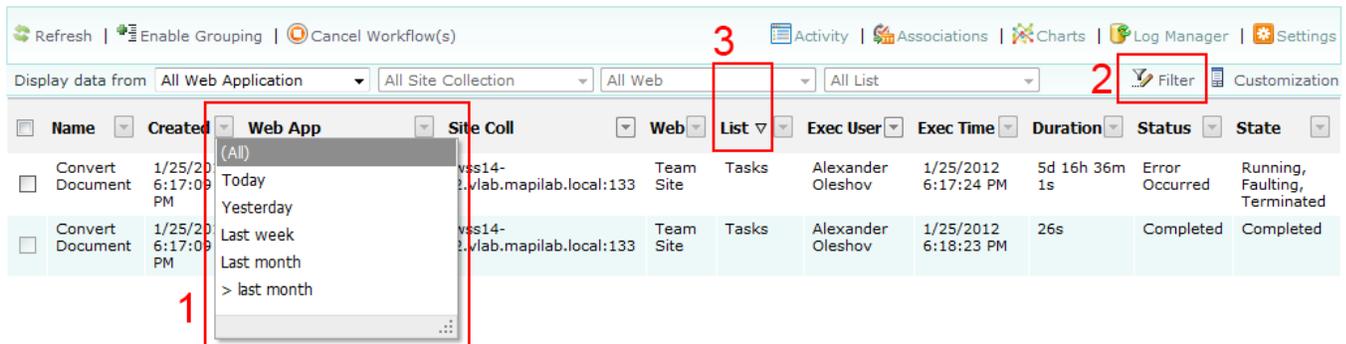
In sections Activity and Associations, in addition to filters of data sampling (4), there are also filters of data displaying (5). Unlike filters of sampling, filters of displaying do not require page refresh. More details about them will be given in the following chapters.

3.1 Activity section

This section displays active workflows that were started or completed in the time period defined in section **Activity Settings** of the program settings (see chapter 2 in this Section of Manual). After the program installation, this period is equal to the last hour.

Besides the settings, filters of data sampling are also responsible for the set of the displayed data (see chapter 3) and filters of data displaying.

Filters of data displaying can be set with the context menu of columns (1), as well as a special window that opens by clicking Filter (2). It is important to understand that these are not two different, but the same filter.



It is easier to set the filter using the context menu (1), but window "Filter Builder" provides more features. For example, while in the context menu you can select only predefined ranges for dates (today, yesterday, last week, etc.), in "Filter Builder" you can select a date range. When changing filters of displaying it is not necessary to update the content of the page with the Refresh button.

When clicking on the column name, sorting by column values is applied. Sorting direction is displayed by an icon in the header (3).

Button Customization (4) in the line of filters of displaying opens "Field Chooser" (5). You can drag headers of unnecessary columns to this window to remove them from the table:

Enable Grouping

Group list by the following fields:

First grouping field:

Second grouping field:

Third grouping field:

Button Enable Grouping (6) in the upper left corner opens the window of grouping control. Any column can be used for grouping. You can use up to three levels of grouping at most. The use of grouping can be good, for example, at automatic calculation of the number of workflows on the site, or the number of workflows with a certain status (8).

Button Cancel Workflows (7) is used for cancelling the workflows selected by check boxes (9). Note that workflows are cancelled without additional confirmation.

After you right-click on the rows of the table, a context menu that allows you to go to page Workflow Details appears.

Activity | Associations | Charts | Log Manager | Settings

Workflow Information

Initiator: MAPILAB\knyazev **Item:** Activity_Duration_Report_2011-06-16T123820
Started: 6/16/2011 12:38:23 PM **Status:** In Progress
State: Running **Web Application:** SharePoint - 80
Site Collection: wss14-2 **Web:** MOSS 2010
List: Shared Documents **Description:** Routes a document for approval. Approvers can approve or reject the document, reassign the approval task, or request changes to the document.
Duration: 228d 23h 59m 0s **Association:** MyApprov

Cancel this workflow

Tasks

Assigned To	Title	Due Date	Status	Related Content	Outcome
MAPILAB\vashchegin	Please approve Activity_Duration_Report_2011-06-16T123820		Not Started	http://wss14-2/Shared Documents/Activity_Duration_Report_2011-06-16T123820.xlsx, Activity_Duration_Report_2011-06-16T123820	

Workflow History

Date Occured	Event Type	User ID	Description	Outcome
6/16/2011 12:38:50 PM	WorkflowError	System Account	The e-mail message cannot be sent. Make sure the e-mail has a valid recipient.	
6/16/2011 12:38:50 PM	WorkflowStarted	MAPILAB\knyazev	Approval was started. Participants: MAPILAB\vashchegin	
6/16/2011 12:38:50 PM	TaskCreated	MAPILAB\knyazev	Task created for MAPILAB\vashchegin. Due by: 1/1/0001 12:00:00 AM	

Data on the workflow instance (10) are presented on the “Workflow Details” page, with the ability to go to a page with the data on workflow associations and the list of all running instances (11). Tasks and elements (13) connected with the workflow are shown in section Tasks, while records from the workflow history are given in section Workflow History (14).

3.2 Associations section

This section shows the associations of all workflows on the farm. The number of displayed associations, as well as the number of elements displayed per page, can be restricted in section **Associations Settings** of the program settings (see chapter 2 of this section).

Refresh | Enable Grouping | Activity | Associations | Charts | Log Manager | Settings

Display data from: All Web Application | All Site Collection | All Web | All List | Filter | Customization

Name	Author	Modified	Web App	Web	List	Running Instances
Lease	MAPILAB\voronko	(All)	SharePoint - 333	Медиатека	Заказы	24
Convert Document	Alexander Oleshov	(Blanks)	SharePoint - wss14-2.vlab.mapilab.local133	Team Site	Tasks	0
TestWOF	Evgeniy Gubko	(Non blanks)	SharePoint Central Administration v4	Central Administration	HarePoint_WorkflowMonitor_Graph_Dayly	0
MyApprov	MAPILAB\vashchegin	Alexander Oleshov	SharePoint - 80	MOSS 2010	Shared Documents	4
siteWf4_url	Pavel Syssoev	Evgeniy Gubko	SharePoint - wss14-2.vlab.mapilab.local133	Team Site		0
TestSiteWF	Evgeniy Gubko	MAPILAB\voronkov	SharePoint Central Administration v4	Central Administration		0

The settings of grouping (1), filters of data sampling (2), filters of data displaying (3) and sorting, selection of columns to be displayed (4) are similar to section Activity, and more details about their use can be found in the previous chapter of this section.

Column Running Instances (5) shows the number of active instances of the workflow. By right-clicking on the line with a workflow in the table, you will open the context menu through which you can go to page Workflow Associations Details of the selected workflow:

Activity | Associations | Charts | Log Manager | Settings

Workflow Association Information

Author:	MAPILAB\washchegin	Created:	3/22/2011 11:46:32 AM
Modified:	3/22/2011 11:47:07 AM	Content type:	Document
WF type:	ListContentAssociation	Web Application:	SharePoint - 80
Site Collection:	wss14-2	Web:	MOSS 2010
List:	Shared Documents	Description:	Routes a document for approval. Approvers can approve or reject the document, reassign the approval task, or request changes to the document.
Running instances count:	4	Template declarative:	True

Enable activity details	True		Start workflow automatically when item is created	True	Change
Clear workflow history older than specified number of days	60	Change	Start workflow automatically when item is changed	False	Change

Workflows

Name	Started	Ended	Item	Status
[-] State: Complete				
MyApprov	10/4/2011 12:24:23 PM	1/30/2012 12:38:18 PM	MAPILabSharePointStatistics2010	Canceled
[-] State: Running				
MyApprov	8/4/2011 4:34:43 PM		Delta Solutions and Technologies	In Progress
MyApprov	6/16/2011 12:38:23 PM		Activity_Duration_Report_2011-06-16T123820	In Progress
MyApprov	4/6/2011 5:57:08 PM		MAPILabSharePointStatistics	In Progress
MyApprov	3/22/2011 11:47:07 AM		02	In Progress

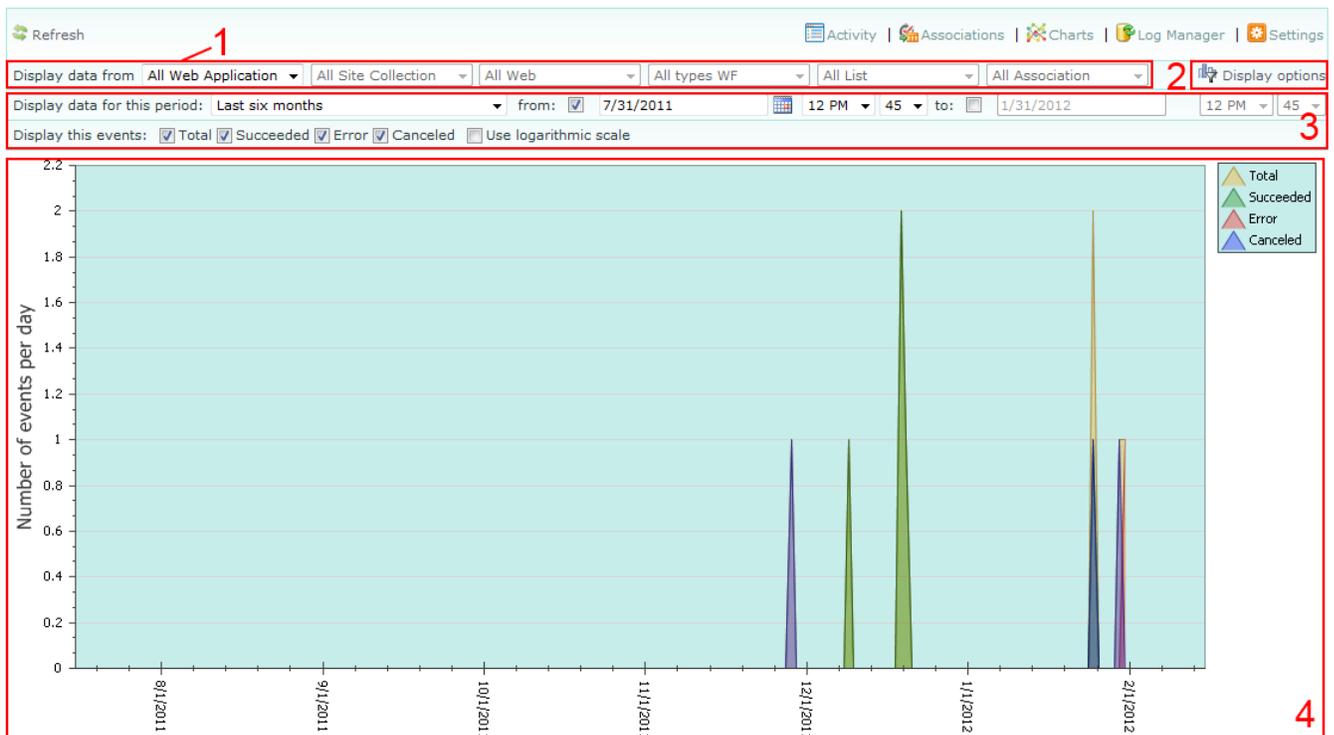
Data on the workflow (6), the block of workflow configuration (7) and the list of all active instances grouped by their status (8) are shown on page Workflow Associations Details.

Clicking on the name of the workflow in the list of instances (8) will bring you to product page “Workflow Details” containing data on a specific workflow instance. The Workflow Details page is described in the previous chapter.

3.3 Charts section

In this section, the total number of workflows, the number of successfully completed, completed with an error and cancelled workflows are shown in the form of charts. Data to be displayed are taken from the internal tables of the product. Settings in sections **Import Job Settings**, **Log Settings** and **Data Collection** of the product settings are responsible for data storage and accumulation (see Chapter 2 of this section). The data are collected from workflow history lists to the internal tables. You can also manage data collection manually in the Log Manager section (see the next section).

Filters of data sampling (1) are similar to filters on pages Activity and Associations (see Chapter 3 of this section). Button Display Options (2) opens the block (3) where you can select the range of dates to be displayed, types of displayed events and enable the logarithmic scale for the vertical axis of the graph (4). The logarithmic scale is useful when there are a large number of workflows.



The type of the horizontal axis of the graph (minutes, hours or days) is automatically selected by the program, depending on the selected date range.

Please note that the product uses different data tables for displaying charts on days, hours and minutes. More details about this are given in the descriptions of setting **Log Settings** in Chapter 2 of this section.

3.4 Log Manager section

This section displays the collection and accumulation of data performed by the program for chart plotting in section Charts. In the normal mode, data are collected automatically (according to the product settings described in Chapter 2), and in this section you can only make sure that data collection is run without errors.

The screenshot shows the Log Manager interface with the following components:

- Buttons: Refresh (1), Start Import (1), Disable Import Jobs (2).
- Navigation: Activity, Associations, Charts, Log Manager, Settings.
- Table of Log Jobs:

Log Name	Records	Limit	First Record	Last Record	Last Modification	Schedule	Status
Minutely	8	5000	11/28/2011 1:17:00 PM	1/31/2012 11:18:00 AM	1/31/2012 11:19:57 AM	every 1 minutes between 0 and 59	Enabled
Hourly	6	5000	12/19/2011 4:00:00 PM	1/31/2012 11:00:00 AM	1/31/2012 12:03:24 PM	hourly between 2 and 7	Enabled
Daily	7	5000	11/28/2011 12:00:00 AM	1/30/2012 12:00:00 AM	1/31/2012 12:54:58 AM	daily between 12:08:00 AM and 1:00:00 AM	Enabled

Progress indicator: 100% (4)

Last job status: (5)

```
1/30/2012 12:33:57 PM Job has been started
1/30/2012 12:33:58 PM Waiting for another job to finish
1/30/2012 12:33:58 PM Retrieving workflow history lists
1/30/2012 12:33:59 PM Retrieving data from workflow history lists
1/30/2012 12:34:00 PM Grouping workflow history data
1/30/2012 12:34:00 PM Saving grouped data into logs
1/30/2012 12:34:01 PM 0/0 items added into HarePoint_WorkflowMonitor_Graph_Minutely list
1/30/2012 12:34:01 PM 0/0 items added into HarePoint_WorkflowMonitor_Graph_Hourly list
1/30/2012 12:34:01 PM 0/0 items added into HarePoint_WorkflowMonitor_Graph_Daily list
1/30/2012 12:34:01 PM Finish
1/30/2012 12:34:02 PM Job completed in 5s
```

With the help of the Start Import (1) button you can force the start of the process on data collection to minutely, hourly and daily tables. At the same time the progress of the performance will be displayed by the indicator (4), and the log of data collection in the window (5) will be under the indicator.

Button Disable Import Jobs (2) allows you to disable all data collection jobs. Pressing the button twice enables the jobs. You can turn on/off the job and also to change its schedule by visiting "Central Administration \ Monitoring \ Timer Jobs \ Review job definitions" and opening job properties named "HarePoint Workflow Monitor Minutely Import Job", "HarePoint Workflow Monitor Hourly Import Job", "HarePoint Workflow Monitor Daily Import Job".

Appendix A. Troubleshooting

A.1 If there no entries in Activity section

After the product installation in the **Activity Settings** section of the product settings workflows that have been active for the last 60 minutes are set to be displayed. Try to increase this value.