User Manual

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1. Introduction Selective Harvests 1. Creating/editing a selective harvest 2. Event harvest 3. Adding seeds to an event harvest 3. Snapshot Harvests 1. Creating/editing a snapshot harvest 4. Domains 1. Creating Domains 2. Finding Domains 3. Editing Domains 1. Editing configurations 2. Editing seed lists 3. Editing crawlertraps 4. Domain statistics 5. Alias summary 5. Schedules 6. Heritrix GUI Access 7. Harvest History 1. All jobs 2. History of a harvest definition 3. History of a domain 4. Details on a job 8. Harvester Templates 1. Download 2. Upload 9. Quality Assurance 10. System State 11. Bit Preservation

Introduction

The NetarchiveSuite is a software toolset built to be operated by librarians with a minimum of training in basic internet concepts, webcrawling methods and usage of this system. It's built to handle the national obligations of preserving the internet in Denmark and its design and architecture is much influenced by the Legal Deposit Law stating the three different harvest types:

• snap shot harvests of the national domain

1. Missing Files

- selective harvests of selected websites
- event harvests in connection with national events

It's also designed to be distributed across the world due to the fact that the danish installation is driven by the two national libraries: The State and University Library, Aarhus and the Royal Library in Copenhagen.

The basic concept in the NetarchiveSuite harvesting module is the notion of domains.

A domain has a two part name [host].[top-level-domain] (e.g. netarchive.dk) or is an IP-number. What is considered a top-level domain is configurable. For most countries it makes sense that the top-level domain is simply the country code (like .dk or .fr), while for others it makes sense to go one level further down (like .cg .uk)

A domain can hold multiple so called configurations. A configuration describes how to harvest the domain or a part of the domain. So one configuration could harvest the whole domain (used by the snapshot functionality) and other configurations could take different minor parts of the same domain (for the selective / event harvest).

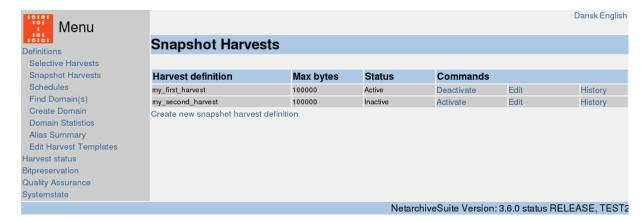
A configuration consists basically of two things

- A harvester template (predefined templates for the Heritrix web crawler)
- A number of seedlists to use with that template

A domain will always have a default configuration (selectable) and that configuration will be used when starting a snap shot harvest. The snap shot harvest therefore takes all domains known in the database.

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Selective Harvests



The front page by default shows the list of selective harvests.

You can [Activate] an inactive harvest definition and [Deactivate] an active harvest definition. If you deactivate a running harvest, the system will finish the running jobs.

Click on [Edit] to change an existing harvest definition or [Create a new harvest definition]

Click on [History] if you wish to trace back all the jobs from former finished harvests.

Creating/editing a selective harvest

Menu				Dan	nsk En
10101	Selective Harvest				
Definitions	Sciective Harvest				
Selective Harvests Snapshot Harvests Schedules	Harvest name: my_fitth_harvest				
Find Domain(s) Create Domain Domain Statistics Alias Summary Edit Harvest Templates	Comments:				
Harvest status					
Bitpreservation Quality Assurance	Schedule: Once_a_day 🔻				
Systemstate	The harvestdefinition my_fifth_harvest is inactive. If active	ated, it will run again on Jun :	.3, 2008 9:06:13 AM		
,	Override with new date (form	nat: DD/MM YYYY hh:mm)			
				D	Remo
	Domain		Choose configuration		rom l
	netarkivet.dk		defaultconfig	<u> </u>	Remov
	netarchive.dk		defaultconfig	-	Remov
	Enter domain(s) to add to the harvest here: Add domains Save Event harvest:				
	Add seeds				
		Notorobius Cuita V	Aprelian: 2.6 O statue DE	II E A C	CE T

Create a new selective harvest definition by pressing [Create new selective harvestdefinition] from the frontpage.

Give the harvestdefinition a recognizable harvest name – you can not change it later. If necessary add a comment.

Choose a schedule from the dropdown list.

Now you can add domains to the harvestdefinition.

Write the name of the domains you want to add in the box "Enter domain(s) to add to the harvest here" and click on [Add domains].

The added domains will appear in the column "Domain".

For each added domain, choose the wanted configuration from the dropdown list for each domain. Press [Save] to save the harvestdefinition.

The scheduling of selective harvest definitions can be overridden by filling out the input field **Override with new date**. Simply set the date to whenever you wish the harvest definition to run next time. The scheduling of the harvest definition will continue from that point in time.

Event harvest

Event harvests are treated almost the same as selective harvests in the system. The only difference is a power-adding of domains function. This could be used for selective harvests as well but was developed for event harvesting definitions where the operator must fill in larger number of URLs without having to edit configurations and seedlists on all those domains.

Adding seeds to an event harvest



Use [Add seeds]. Enter identified start-URLs covering the event in the "Enter seeds:" box. Select a harvest template with the "Harvest template" drop down box

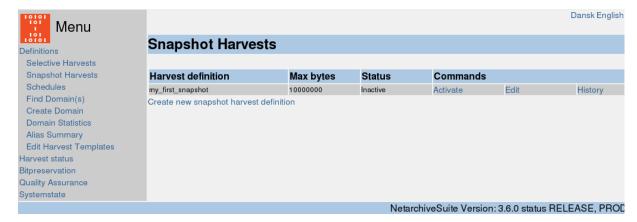
All seeds will use the same template, so to harvest different seeds with different templates you need to add them bunch by bunch for each template you need for your event harvest.

Pressing [Insert] starts the power-adding function. This function runs through the entered seeds one by one and does the following with each seed:

- 1. Finds the domain from which the seed derives
- 2. Creates a seedlist with the name of the harvestdefinition and the template as seedlist-name
- 3. Creates a configuration with the name of the harvestdefinition and the template as configuration-name. And select the seedlist from (2) to use with the new configuration. If the seedlist to create in (2) or the configuration to create in (3) already exist (If the power-adding function has been used before with other seeds from the same domain in the same event harvest) the system will only add the new URLs to the existing seedlist.

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Snapshot Harvests



On [Snapshot Harvests] new snapshot harvests are started, harvesting all domains known to the system in their default configurations. An overview of all snapshot harvests is also provided.

[Create new harvestdefinition] opens the template below.

Creating/editing a snapshot harvest

Menu				Dansk English
Definitions	Snapshot Har	vest		
Selective Harvests				
Snapshot Harvests	Harvest name:	my_second_harvest		
Schedules	Max number of bytes per dor		_	
Find Domain(s)	man name of bytes per ac-	20000000		
Create Domain				
Domain Statistics	Comments:			
Alias Summary				
Edit Harvest Templates				
Harvest status				
Bitpreservation				
Quality Assurance				
Systemstate				
		is that were not comp	letely harvest in a previous h	
	None			0
	my_first_harvest			•
	Save			
			NetarchiveSuite Ve	ersion: 3.6.0 status RELEASE, TEST2

This page is used to define name and size (max. bytes per domain) of the harvest. It is recommended to systematize the naming for clarity, e.g. 2007-1, 2007-2 etc.

The size of the harvest can be defined in two ways: at the harvest definition [Snapshot Harvests] or at the configuration of the single domain. It will always be the lower size limit stopping the harvesting of a domain.

Comments can freely be added.

Snapshot harvests can be based on previous snapshots in the sense that it can be limited to only harvest domains that hit the max number of bytes limit in a previous harvest

The domains completely finished (not hitting the max number of bytes limit – either on the configuration level or on the snapshot harvest level) in the first harvest will not be included in the second.

All other domains will be harvested from the beginning up till the newly specified limit for the new snapshot.

[Save] saves the harvest definition and returns to [Snapshot harvests].

After defining a snapshot harvest the harvest is activated with the [Activate] button on the snapshot frontpage. Harvest will not start until you press [Activate]. Status then changes to 'Active'.

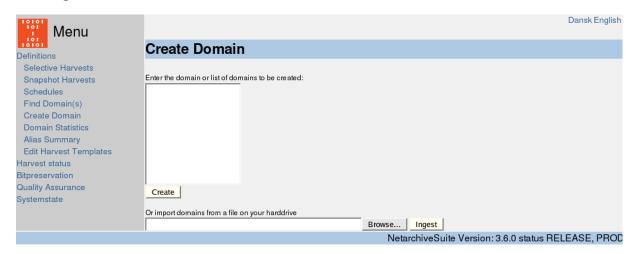
[Deactivate] is not relevant in Snapshot Harvests because they only run once. By [Edit] the Snapshot Definition can be changed but only before activation. Parameters changeable are size, commentary and if previous harvest startpoint should be used. The name can not be changed.

 $[\textit{History}] \ provides \ an \ overview \ of \ the \ specific \ harvest: \ see \ User \ Manual/Harvest \ History$

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Domains

Creating Domains



The [Create domain] is used for creating new domains in the system. It is possible to create a single domain as well as list of domains. It is also possible to import domains from a file.

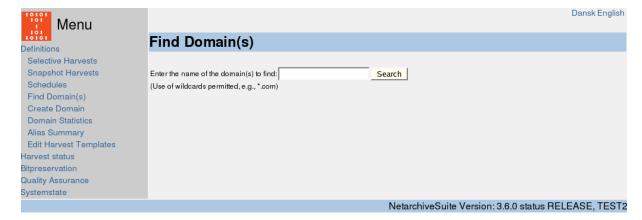
To create single domains enter domain names in the text box and press [Create].

To bulk create domains from a file select the file from your local computer with [Browse] and press [Ingest]. The file must be a simple list of domain names – one at each line. The file must be UTF-8 encoded if it contains special characters.

New domains get a default configuration when created (with the defaultorderxml template and a maximum number of bytes at 500Mbytes). New domains also get a defaultseedlist when created. This seedlist contains a link to the frontpage of the domain. The frontpage is defined as www.domainname – e.g. ' www.netarchive.dk' for the domain 'netarchive.dk'

Already existing domains in the system will not be recreated.

Finding Domains



[Find Domain(s)] is used to find domains existing in the system.

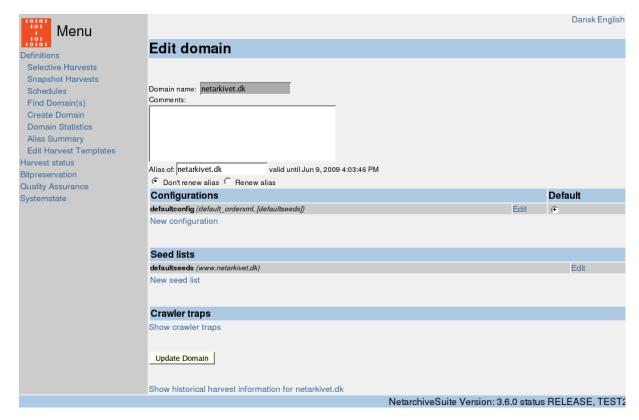
Write a domain name in the box (e.g. kb.dk). Searching is done on the complete text string. Press [Search].

Left and/or right wildcards with *.

If there are several hits, a list is given of the found domains. If only one hit it leads directly to the Domain page.

If the search for a specific domain results in no hits, you are prompted with the ability to create the domain in the system and by accepting [Yes] it leads directly to Domain page for the newly created domain.

Editing Domains



'Edit domain' is an overview of a single domain where it is possible to edit the domain's definition in the harvest system.

Free commentary text box.

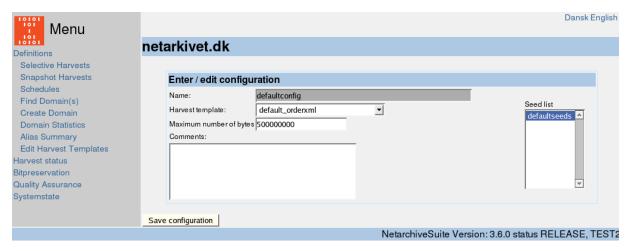
'Alias of': Here it can be stated if the domain is an alias of another domain – they are 100% identical in content and only one of them should be harvested. Domains marked as an alias will not be harvested within the snapshot harvests. Alias is defined one year at a time and then has to be renewed.

'Configurations': [New configuration] and [Edit] open a new page: 'Enter/edit configuration' (see below) 'Seed lists': [New seed list] and [Edit] opens a new page: 'Enter/edit seed list'. (see below)

'Crawler traps': [Show crawler traps] Open a new text box: 'Crawler traps' (see below)

[Show historical harvest information for ...] opens a new page "Harvest history for domain...." (see User Manual/Harvest History) ['

Editing configurations



'Enter/edit configuration' is used to define a new configuration and edit an existing one. A configuration contains information about which Harvest template and Seed lists are used (more than one Seed list can be used - hold down CTRL).

At the creation of a new configuration a name is given that thereafter can not be changed.

Furthermore it is possible to choose between different Harvester templates and maximum number of bytes to be harvested in each harvest of the configuration. The default number of bytes is 500Mbytes

Editing seed lists



'Enter/edit seed list' is used to define a new Seed list or to edit an existing one.

At the creation of a new Seed list a name is given that thereafter can not be changed.

In the 'Seeds' text box a list of seeds to be harvested is given. Seeds can be omitted by writing a # prefix, e.g. # • http://www.kb.dk. This can also be used for comments inside the seedlist – e.g. '#this seed is important'

Editing crawlertraps

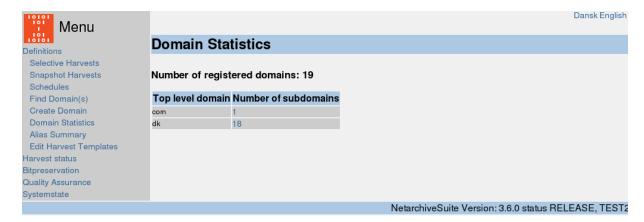


A crawlertrap is a path followed blindly by the harvester which in principle can continue forever. This typically could be a calendar.

To avoid crawlertraps on a domain, the administrator can state parts of URLs that should never be harvested (in any configuration). Matching URLs are omitted in all harvests of the domain and in other domains harvested in the same job. So be careful not to give too general statements that could potentially omit things on other domains (perhaps always include the domainname itself in the statement).

The string of text must be stated as a regular expression.

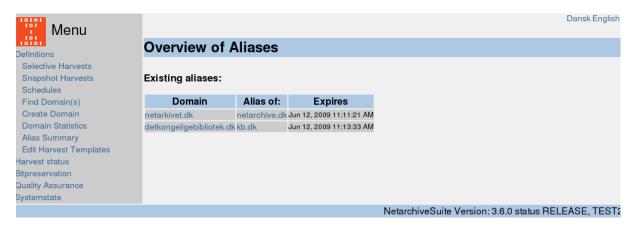
Domain statistics



The domain statistics page will give you information about number of subdomains for each unique Top level domain known in the system. IP-numbers will be counted separately.

The number in the "Number of subdomains" column is clickable and will do a search for all domains matching that Top level domain. This is only applicable to Top level domains with a limited number of subdomains since the matching domains will be listed on one page – and that page will get very long if the system contains hundreds of thousands of domains.

Alias summary



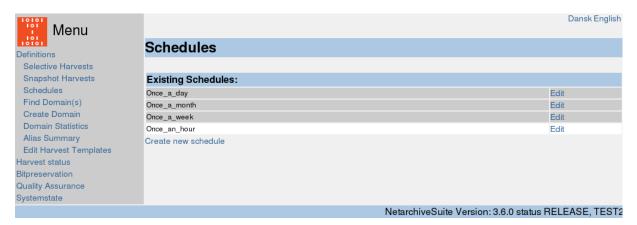
The alias summary page gives an overview of the domains marked as aliases of other domains in the system. Both domain names are clickable and will open the domain page for the clicked domain.

The "Expires" column shows when the alias expires (12 month after they are marked). The mark does not disappear after 12 month in the database but the "Overview of Aliases" page will show the "expired" ones in the top.

To renew an alias for another 12 month one is currently forced to open the domain page of the marked domain (the "Domain" column) – select "renew alias" and press "Save"

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Schedules

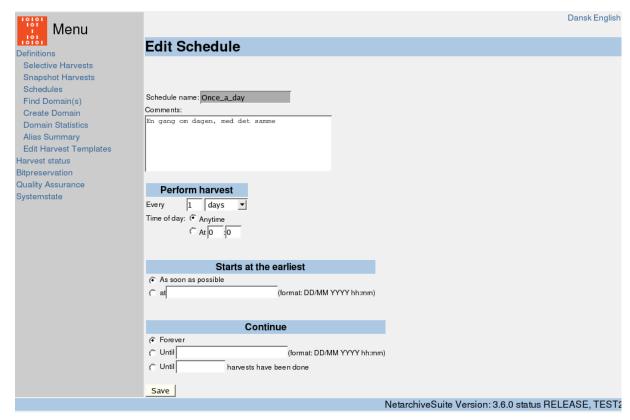


Schedules are only applied on selective and event harvests.

A schedule defines a harvesting frequency. The minimum entity is one hour. It is possible to choose an automatically fixed start and/or end time for a specific harvest.

It is possible to create an infinite number of schedules.

For a new schedule click on [Create new schedule]. And to edit an existing schedule press [Edit].



Give the schedule an easily recognizable name - note that it can't be changed once saved. If necessary, add a comment.

Fill in the frequency and - if necessary - time of the day for the harvest to run. In the drop down menu you have the choice between hours, days, weeks and months. Changing "days" switches the "Time of day" so that:

- "hours" lets you choose a specific minute of the hour
- · "days" lets you choose a specific time of day
- "weeks" lets you choose a specific day of the week
- "months" lets you choose a specific day of the month

After selecting the frequency you must select "Start at the earliest" which could either be as soon as possible (default) or at a specific date and time.

The last thing to determine is how long this schedule should go on. The default for the duration of a schedule is forever. It is also possible to choose an end date and a certain number of harvests to perform. This allows you to define schedules that will only run in a shorter period - e.g. in connection with an event harvest where the date range in which to harvest is predefined.

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Heritrix GUI Access

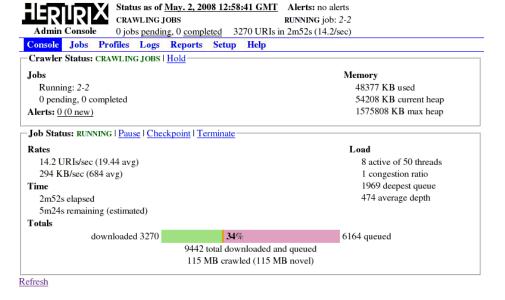
It is possible - only while a job is running - to access the Heritrix user interface on the harvester machine. Start a browser on the harvestermachine and use the port specified, e.g. • http://my.harvester.machine:8090. The port is defined by the setting

settings.harvester.harvesting.heritrix.port. Enter the administrator name e.g. "admin" and password e.g. "adminPassword" as set in the settings.harvester.harvesting.heritrix.adminName and in

settings.harvester.harvesting.heritrix.adminPassword settings.

See in the installation manual how you change settings.

In the Heritrix GUI you can e.g. pause, stop or restart a job.

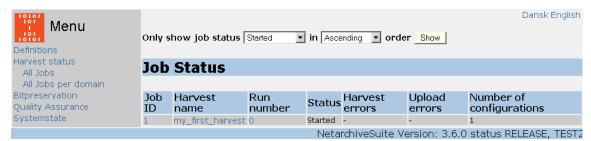


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Harvest History

All jobs

[Harvest Status] in the left menu by default shows a chronological list of all jobs ever harvested with status Started in ascending order. The same does [All jobs]



If information is wanted for jobs with other statuses (or **All** statuses) or other sort order, then this can be specified in the combo-boxes in the top of the page and then activated by clicking the **Show** button.

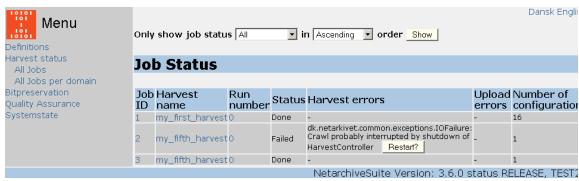
For each job the page shows information about the job and its status as well as information about errors (harvest errors or upload errors) and number of configurations in the job.

Chose [Run number] if you want to check details on a specific run of that harvestdefinition - note that a run can consist of multiple jobs.

Chose [Harvest name] if you want to check details on the history of a specific harvest definition.

Chose [JobID] if you want to check details on a specific job.

In case of Harvest errors, a [Restart] button will appear and the operator can choose to resubmit that specific job to be harvested again.



Menu	Uarre	at bi	-t	for full	harvest in	fina	t been	Dansk English
Definitions	патуе	St III	Story	ioi iuii	harvest i	IIY_IIIS	t_liai v	est
Harvest status								
All Jobs All Jobs per domain Bitpreservation	Run number	Start time	End time	Bytes Harvested	Documents Harvested	number	Number of failed jobs	Number of resubmitted jobs
Quality Assurance Systemstate	0	Jun 9, 2008 4:08:59 PM	Jun 9, 2008 4:11:37 PM	2,304,814	493	1 Show jobs	0	0
				N	etarchiveSuite	Version: 3	.6.0 status	RELEASE, TEST2

The history page for a harvestdefinition is the same as you can reach from the frontpage with the [History] buttons.

This history page gives you further information for each run of the harvestdefinition: Start time, End time, number of bytes harvested and number of documents harvested.

The page also show how many jobs each run consists of and how many of these that failed and eventually got resubmitted.

History of a domain

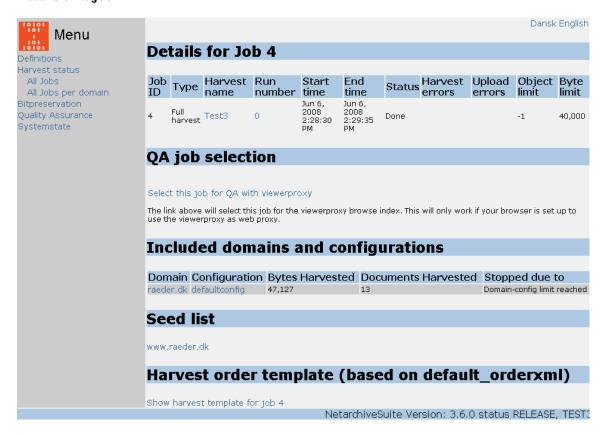
Menu								Dar	nsk English
Definitions	Harvest I	nistor	y f	or netark	ivet.	dk			
Harvest status									
All Jobs All Jobs per domain	Harvest name	Run number	Job ID	Configuration	Start time	End time	Bytes Harvested	Documents Harvested	Stopped due to
Bitpreservation Quality Assurance Systemstate	my_fifth_harvest	0	3			Jun 13, 2008 11:47:40 AM	11,470,199		Domain Completed
	NetarchiveSuite Version: 3.6.0 status RELEASE, TEST2								

If you want to see all the jobs connected to a specific domain, click on [All jobs per domain] and search for the domain name.

You will get a chronological list of the harvest definitions including the chosen domain.

This pages gives the same history information as the other two history pages and further more gives a "Stopped due to" information. This column will show the operator if a harvest was stopped unexpectedly of if the harvest hit the max-bytes limit for the chosen domain or if the harvest was stopped because of en error on the harvester machine.

Details on a job



Clicking on a jobID on any of the harvest history pages will give you a very detailed report on the job.

This page gives all the information available about the job itself (e.g. max-bytes limit) and about the single domains included in the job.

Furthermore the page shows the complete seedlist used with the job and the complete "Harvest order template" as well as detailed error information in case of errors. The two latter is mainly for advanced users debugging specific crawls where things didn't go as expected.

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Harvester Templates



The [Edit Harvest Templates] is used for managing the harvester templates. It enables you to both download and upload templates from/to the system database.

Download

The download part lets you view existing templates as either plain text or XML in the browser window or download existing templates to your local computer.

Select the template you want to view/download in the first select box, select the method in the second and press [Retrieve]

Upload

In the Upload section you can either update an existing template or create a new one.

To update an existing template, select the template to update in the first select box and browse for a file on your local computer with the [Browse] button.

By pressing [Replace harvesttemplate with file from your own harddrive] you will overwrite the chosen template in the database.

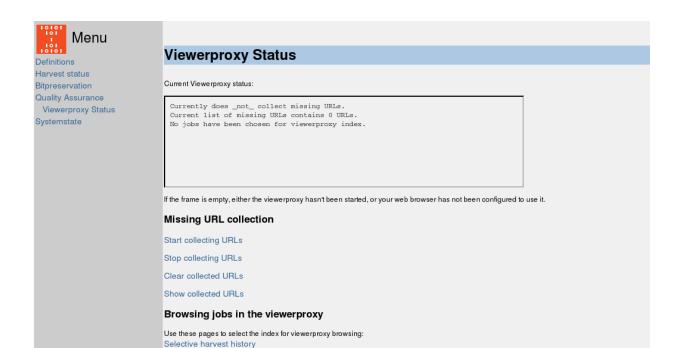
To create a new template give the new template a name in the "Template Name" box and select a file from your local computer with [Browse].

By pressing [Create a new harvesttemplate using a file from your own harddrive] you will add the new template with the given name to the database.

When using the upload functions the uploaded files will be checked against certain rules to ensure that the templates contain specific elements used by the NetarchiveSuite system.

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Quality Assurance



Quality assurance is done by browsing the archive for selected domains. If something is missing on the pages the system can be set to automatically collect all the missing URL's for later transfer to the harvesting system. Before doing Quality Control you need to setup your browser to use a proxyserver (see Quick Start Manual)

NetarchiveSuite Version: 3.6.0 status

It is suitable to investigate one domain at a time (unless several domains are included in the same website-complex).

Snapshot harvest history

[Start collecting URL's] Hereby starts the collection of URL's. The Current Viewerproxy status textbox shows if the system collects URL's or not – and how many URL's are currently collected.

 $[\textit{Stop collecting URL's}] \ \textit{Collection of URL's can be stopped at any time}.$

[Clear collected URL's] The list of URL's can be cleared at any time e.g. when investigating a new domain starts. NB! This function can not be undone.

[Show collected URL's] The list of URL's can be viewed at any time. The list can be copied and manually be added to relevant Seed lists for the relevant domains in the harvesting system.

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System State

The [Systemstate] pages lets the operator monitor the entire system (all machines and applications) from one central point.

Menu	0											
Definitions Harvest status	Overview of the system state											
Bitpreservation Quality Assurance Systemstate	Organisation (show all)	Machine	Port	Application	Index (show all)							
Overview of the system state	SB	kb-test-adm-001	8082	BitarchiveMonitorServer	- 0	Jun 13, 2008 12:21:49 PM dk.netark INFO: BatchReplyMessage: ' BatchReplyMessage for batch job ID FilesProcessed = 1 FilesFailed = 0						
						More						
	SB	sb-test-acs-001	8075	ViewerProxy	0	Jun 13, 2008 12:21:42 PM dk.netark INFO: Starting viewerproxy jetty c						
	SB	sb-test-bar-001	8075	BitarchiveServer	0	Jun 13, 2008 12:21:48 PM dk.netark INFO: Finished batch job dk.netark						
	SB	sb-test-har-001	8081	HarvestControllerServe	r0	Jun 13, 2008 12:21:38 PM dk.netark INFO: HarvestControllerServer star						
	SB	sb-test-har-001	8081	SideKick	0	Jun 13, 2008 12:21:37 PM dk.netark INFO: Initializing a JMS connection						
				NetarchiveSuite V	ersion:	3.6.0 status RELEASE, TEST2						

The initial view is the last log-message from every machine and every application.

This can be narrowed down to single "Organisations" / "Machines" / "Ports" / "Applications" and extended to not only show the last log-message but the last 100 log-messages (don't do that for the initial view of everything).

To narrow the view press either of the links on the page – when narrowed the view can be extended again with the [Show all] buttons that will dynamically appear in the headlines of the table.

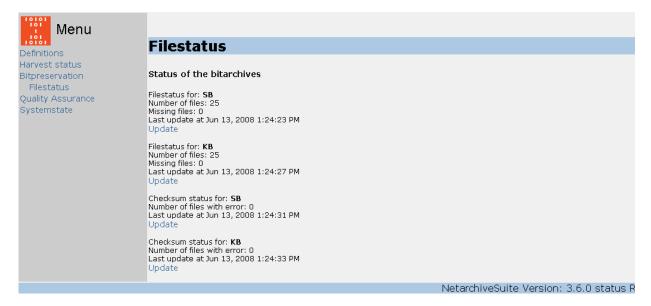
The following is a view of one harvester instance on one specific machine (narrowed down by machine + port + application):

Definitions Harvest status Bitpreservation Quality Assurance Systemstate Overview of the system state	Overviev	v of the s	yst	em state		
	Organisation	Machine	Port	Application (show all)	Index (show all)	
	КВ	kb-test-har-001	8081	HarvestControllerServer		Jun 13, 2008 1:17:04 PM dk.netarkivet.harvest INFO: Job ID: 4, Harvest ID: 2 RUNNING timestamp discovered 2008-06-13T11:17:04Z 1102 61
	КВ	kb-test-har-002	8081	HarvestControllerServer		Jun 13, 2008 12:21:28 PM dk.netarkivet.harves INFO: HarvestControllerServer started.
	КВ	kb-test-har-002	:8082	HarvestControllerServer	0	Jun 13, 2008 12:21:50 PM dk.netarkivet.harves INFO: HarvestControllerServer started.
	SB	sb-test-har-001	8081	HarvestControllerServer	0	Jun 13, 2008 12:21:38 PM dk.netarkivet.harves INFO: HarvestControllerServer started.
						NetarchiveSuite Version: 3.6.0 sta

If you load this page just while a harvester instance is restarting you might get a JMX-error. The same thing will happen if one of the configured applications does not run or does not respond. So the system state will in some sense also discover non functional applications.

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Bit Preservation



The [Bitpreservation] interface lets you control active checks of the status of the underlying bitarchive. This only applies if your installation uses the NetarchiveSuite bitarchive application.

The interfaces lets you initiate two types of checks on every copy of the files in the archive: Filestatus and Checksum status.

In the example on the screen dump there are two bitarchive instances – ${\bf SB}$ and ${\bf KB}$.

The [Update] buttons let you update the status for both files and checksums for both bitarchive instances. The page will give you the Filestatus as

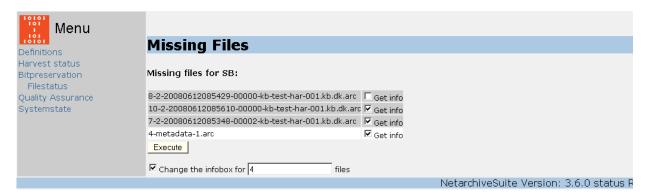
- Number of files
- Missing files
- · Last updated at

and the Checksum status as

- · Number of files with error
- Last updated at

The Filestatus checks are rather fast because only the existence of the files are checked whereas the Checksum status checks can take days/weeks for larger archives depending on the number of CPUs and the IO-speed of your hard drives.

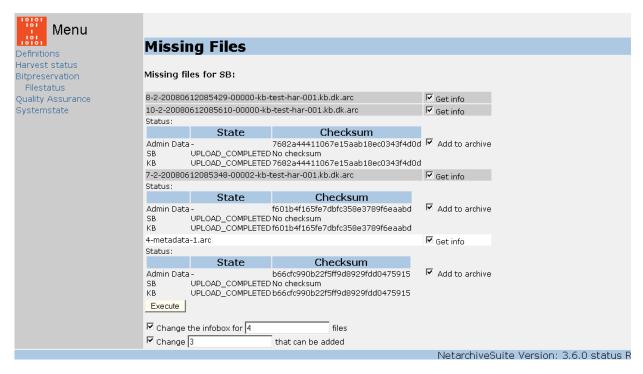
Missing Files



If files are missing on one instance of the bitarchive a [Show missing files] button will appear right next to the line with the number of missing files

For each missing file you can select "Get info". With the "Change the infobox for"-field in the bottom of the screen you can select a number of files in one operation.

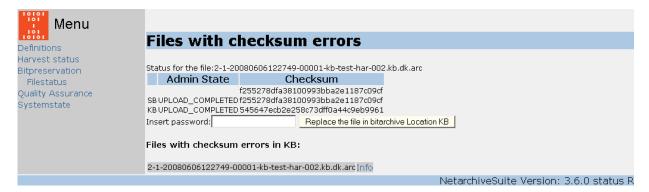
Pressing [Execute] makes the system get a fresh status on the files and their checksums from both copies (out of which one is missing) and from the administrative system so that there are always three checksums available for each file.



If the two "remaining" checksums (On the screen dump "273356f23254684051dc99ab7c0e8937") are identical the system allows you to add the missing file to the bitarchive instance that had lost it.

This requires you to click "Add to archive" and then press [Execute]. Marking files for addition can be done for a number of files in one operation.

Checksum Errors



In case of a checksum error this error can be corrected through the interface. To replace a bad file you need to type a security password and press [Replace the file in bitarchive Location XX]. The bad file will not be completely removed but moved to an 'attic' directory on the bitarchive server holding the bad file.

edit

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