NISHA Node Configuration and Maintenance Manual

NISHA Proxy

The NISHA Proxy component requires very little configuration. Based on the NISHA Node being configured, the configuration files need to change. The default configuration installed with the package delivers settings for running the Basic Node. Installation assumes that the CouchDB backend is localized at the same machine. This can be changed by editing the */etc/nginx/sites-enabled/nisha* configuration file. Change all occurrences of

```
proxy_pass http://localhost:5984;
```

to reflect where your CouchDB is located and what port it listens on. Restart *nginx* server after making the change.

In case of installation of a Super Node, the configuration has to be changed. Please replace the */etc/nginx/sites-enabled/nisha* with contents as in example below:

```
proxy_cache_path /var/lib/nginx/cache levels=1:2
keys_zone=cache:30m max_size=1G;
proxy_temp_path /var/lib/nginx/proxy 1 2;
proxy_ignore_headers Expires Cache-Control;
proxy_cache_use_stale error timeout invalid_header http_502;

server {
  listen 1337;
  server_name localhost;

  location / {
   proxy_pass http://localhost:5984;
   proxy_intercept_errors on;
   proxy_redirect off;
   proxy_set_header Host $host;
   proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
   break;
 }
}
```

The example also assumes that the Super Node CouchDB is located on the same machine. In case it isn't, please change the *proxy_pass* line accordingly and restart *nginx* server.

In case of Basic Node installation, the Node's administrator can configure which Super Nodes can be used for searching the network by changing entries in the */etc/nginx/includes/supernodes.conf* file.

```
upstream supernodes {
        server nisha1.cert.pl:1337;
        server fisha1.govcert.hu:1337;
        server nisha1.if-is.net:1337;
        server nisha1.cert.pt:1337;
}
```

Removing or adding another supernodes allows to balance traffic from Basic Nodes when searching and publishing in the NISHA Network.

NISHA Node Manager

The NISHA Node Manager component can be configured via changing settings in the */etc/nisha/nisha-node-manager.properties* file. The standard contents of the file are as in the example below:

```
[node-manager]
couchdb_port=5984
couchdb_nisha_user=nisha
couchdb_http_socket_timeout=20000
couchdb_admin_user=admin
couchdb_nisha_password=
couchdb_admin_password=
node_description=NISHA Basic Node
couchdb_host=localhost
```

The file is read by the web configuration utility during restart of the *tomcat7* web application server. The following settings have to be set accordingly as during the installation process:
- couchdb_admin_user
  Username of the CouchDB administrator. Usually *admin*.
- couchdb_nisha_user
  Username of the CouchDB user for the NISHA Network. Usually *nisha*.
- couchdb_admin_password
  Please set the password of the user *admin*.
- couchdb_nisha_password
  Please set the password of the user *nisha*.
- couchdb_host
  Please set FQDN where the CouchDB server is installed. Leave *localhost* in case it is the same machine
- couchdb_port
  Please set the port CouchDB is listening on. Usually it has value of *5984*.

After changing the values please restart the *tomcat7* web application server by issuing command as in example below:

```
service tomcat7 restart
```

NISHA Replicator

The NISHA Replicator component can be configured via changing settings in the
/etc/nisha/nisha-replicator.properties file. The standard contents of the file are as in the
example below:

```
[replicator]
couchdb_host = localhost
couchdb_port = 5984
node_id = http://nisha.example.com:1337
couchdb_admin_user = admin
couchdb_admin_password =
couchdb_nisha_user = nisha
couchdb_nisha_password =
couchdb_http_socket_timeout=20000
replicationIntervalInMills=4000
```

The file is read by the web configuration utility during restart of the *nisha-replicator* service.
The following settings have to be set accordingly as during the installation process:
  ● node_id
    This setting is responsible for identification of a NISHA Node. It has to be set to the
    URL describing connection to the node. This usually has for of http://
    <FQDN>:*<port>*, where *FQDN* is the full domain name of the node and *port* is the
    port to the *nisha-proxy* component (usually it has value of *1337*).
  ● couchdb_admin_user
    Username of the CouchDB administrator. Usually *admin*.
  ● couchdb_nisha_user
    Username of the CouchDB user for the NISHA Network. Usually *nisha*.
  ● couchdb_admin_password
    Please set the password of the user *admin*.
  ● couchdb_nisha_password
    Please set the password of the user *nisha*.
  ● couchdb_host
    Please set FQDN where the CouchDB server is installed. Leave *localhost* in case it is
    the same machine
  ● couchdb_port
    Please set the port CouchDB is listening on. Usually it has value of *5984*.
  ● replicationIntervalInMills
    This setting describes how often the replication process will be triggered. Typical
    value is 4 sec. You can change it to you needs. The greater the value, the longer it
    will take to push new data from the Node to the NISHA Network.

After changing the values please restart the *nisha-replicator* service by issuing command as
in example below:

```
service nisha-replicator restart
```

NISHA Node Hardening

It is important to harden access to the NISHA Node. Each Node is a responsibility of an institution owning the Node. It is advised to filter access to the Node and allow only connections made from local Portal and other Nodes in the NISHA Network. To facilitate this task please use the *iptables* tool shipped with the Debian Linux distribution. Please allow connections **only** from other Nodes in the NISHA Network to ports:

- 1337
  The port is used to connect to the NISHA Network Proxy component. It is used to post and search for content in the Network.

- 31337
  This port is used to check whether the NISHA Replicator component is working and active. In case this port is not reachable, the Node is treated as not working and disconnected from the NISHA Network.

NISHA Node

First configuration

The NISHA Node after installation is in inactive state. It has to be activated by one of NISHA Super Nodes and be assigned a role of either Super or Basic Node.

Node's and Network configuration is handled by the NISHA Node Manager component which is a web-based configuration tool. It can be accessed by a web browser under the URL *http://localhost:8080/nisha-node-manager/*

Welcome to NISHA Manager

○ debug ● info [Apply logger level]

Configure local data

Log in as operator

ver: 686

The first time the NISHA Manager is accessed we need to configure local data describing the NISHA Node. Please continue to the *Configure local data* page.

UNDEFINED

Local configuration

Home Log in

Node Domain Name:	
Port:	
Description:	
Location:	
Operator Id:	
Password:	
Email:	

[Save configuration]

ver: 686

This page allows configuration of several settings relevant for proper operation of the NISHA Node. These are:

- Node Domain Name
  The domain name (FQDN) of the Node.
- Port
  The port number on which the *NISHA Proxy* component is listening for connections.
- Description
  A short description of the Node.
- Location

A short description of location the Node is in. For example country or city.
- Operator Id
  A first operator username.
- Password
  A password for the operator.
- Email
  Email of the operator.

After saving the configuration, the Node is ready to be added to the NISHA Network.

Node maintenance

The section describes a typical operator work regarding NISHA Node maintenance. To access the configuration UI please login with credentials configured in previous step.

The configuration UI presents several options:

Configuration section

The *Configuration* link leads to the same configuration screen as the first configuration of a Node.

The *Contact* link leads to a screen where an operator can update contact information. This is only for informational purposes. The *Logged operator* link on the main page leads to a similar screen where an operator can update password and contact information.

NISHA Network section

The section allows to configure and maintain information about NISHA Network. The *New Node* link leads to a page allowing adding new NISHA Node to the network. This only works if the management interface operates on the NISHA Super Node.

nisha
network for information sharing and alerting

○ debug ● info
[Apply logger level]

Configuration

Configuration

Logged operator

NISHA Network

New node

Network update

Alerts

Messages

New message

Inbox

Outbox

Broadcast

Resources

Resources search

Add node

Host: [   ]

Port: [   ]

Role: [BASICNODE ▼]

State: [ACTIVE ▼]

State reason: [[required]   ]

[Add node]

ver: 686

When adding a new Node to the network a Super Node operator has to provide a FQDN of the NISHA Node, port it listens on and its assigned role. The state should be left as ACTIVE. The new NISHA Node has to be configured before adding it to the NISHA Network.

The *Network update* section provides information about all NISHA Nodes configured in the network. A Super Node operator can then view details of a particular Node, remove it or update its configuration, e.g. change its state in the NISHA Network.

Operator Menu

○ debug ● info
[Apply logger level]

Configuration	**NISHA Network**	**Messages**	**Resources**
Configuration	New node	New message	Resources search
Logged operator	Network update	Inbox	
	Alerts	Outbox	
		Broadcast	

Find node: [   ] [Name Search]

State filter? ☑ active ☐ inactive ☐ blocked ☐ removed

Network - nodes: 10, last change: 2013-10-17 11:27:28 CEST NODE_ADD nisha2.halozatbiztonsag.hu

Role	Name	Port	State	Alerts			
BASICNODE	nisha2.cert.pl	1337	ACTIVE		[Remove]	[Details]	[Update]
BASICNODE	nisha2.if-is.net	1337	ACTIVE		[Remove]	[Details]	[Update]
BASICNODE	nisha1.halozatbiztonsag.hu	1337	ACTIVE		[Remove]	[Details]	[Update]
BASICNODE	nisha2.cert.pt	1337	ACTIVE .		[Remove]	[Details]	[Update]
SUPERNODE	nisha1.if-is.net	1337	ACTIVE		[Remove]	[Details]	[Update]
SUPERNODE	nisha1.cert.pl	1337	ACTIVE		[Remove]	[Details]	[Update]
SUPERNODE	nisha1.cert.pt	1337	ACTIVE		[Remove]	[Details]	[Update]
SUPERNODE	nisha2.halozatbiztonsag.hu	1337	ACTIVE		[Remove]	[Details]	[Update]

ver: 686

The section *Alerts* holds information about problems occurring in the NISHA Network. These are related to communication problems between nodes and allow operators to monitor network state. Alerts serve only informative purpose and can be easily dismissed if found not relevant anymore.

Operator Menu

○ debug ⦿ info
[Apply logger level]

Configuration   **NISHA Network**   **Messages**   **Resources**

Configuration   New node   New message   Resources search

Logged operator   Network update   Inbox

                           Alerts   Outbox

                                                 Broadcast

Find alerts sorted by: [name, time] [_____] [Affected node] [Detecting node]

Find alerts sorted by: [time] [All alerts] [This node alerts]

[Hide closed alerts]

No results [search for all alerts]

ver: 686

Messages section

NISHA Node Manager is equipped with basic functionality allowing for inter-network communication between operators of NISHA Nodes. This system relies on NISHA Network infrastructure and does not require any configuration and can be used by operators out-of-the-box. The system allows to send multicast (just chosen recipients) or broadcast (all nodes) messages. Users can also attach files to messages and save them for later use as drafts.

Message

To: ○ multicast ○ broadcast

nisha1.cert.pl:1337 ▼ ✚

From: nisha1.cert.pl:1337

Subject: [   ]

Type: MESSAGE

Text:

Attachments: ✚

[Discard]   [Save draft] [Send]

The NISHA Node Manager provides Inbox and Outbox for messages, where operators can see communication between them as it happens on the Network. The Inbox works also as a task list in case the message requires special attention and allows to mark messages as "done".

Inbox view:

Received messages

| Mark read | Mark done | Archive | | | Refresh |
| Undo read | Undo done | Undo archive | | | Show all |

☐	From	Date	Subject	Type	Status

<< [0] >>   Showing: 0 - 0 of total 0.   Items per page: [10 ▼]

Outbox view:

Sent messages

	To	Date	Subject	Type	Status

Archive Undo archive Refresh Show all

<< 0 >> Showing: 0 - 0 of total 0. Items per page: 10 ▼

The special broadcast messages have their own inbox to distinguish them from Node-to-Node communication.

Broadcast messages

Refresh

	From	Date	Subject	Type

<< 0 >> Showing: 0 - 0 of total 0. Items per page: 10 ▼

Resources section

This section allows browsing through resources in the whole NISHA Network. This view is intended only to search for specific articles and perform operations on them. Currently only one operation is supported, named *Invalidate*. It allows to mark articles as _not to be used_ in publishing. This serves as a mechanism for removing unwanted content from the network without actually deleting the content. Only Super Node operators are capable of invalidating articles in the NISHA Network.

Find resource starting with: [_____] [Search]

Query context: ● title ○ id   Range: ● global

Id	Title	Owner	Status	Action
071a64cd7d0634c077a1870c201ac72f	N.Korea's GPS Jamming Is Terrorism Pure and Simple		available	[Details] [Invalidate]
071a64cd7d0634c077a1870c201c22d9	The use of passwords in a technological evolution		available	[Details] [Invalidate]
c2abd001467e7994fabf5c57a9b6a77d	Trzydzieści dni sprzątania w OpenSSL		available	[Details] [Invalidate]
c9becbd68d40b77f244f898d7534d775	U.K. Sets Up Cybersecurity Center to Coordinate Computer Defense		available	[Details] [Invalidate]
c9becbd68d40b77f244f898d7509944e	U.S. Demands China Block Cyberattacks and Agree to Rules		available	[Details] [Invalidate]

Summary

The NISHA Node Manager is a simple tool allowing basic interaction with the NISHA Network and easing the process of building own network capable of handling article and message exchange between Nodes and Portals. The tool has to be installed on Nodes to configure them. Interface on Basic Nodes has similar but reduced capabilities to reflect Node's role in the NISHA Network.