Download Station Add-on Developer's Guide v4

Disclaimer

THE INFORMATION CONTAINED IN THIS DOCUMENTATION IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. WHILE EFFORTS WERE MADE TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION CONTAINED IN THIS DOCUMENTATION, IT IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. IN ADDITION, THIS INFORMATION IS BASED ON QNAP'S CURRENT PRODUCT PLANS AND STRATEGY, WHICH ARE SUBJECT TO CHANGE BY QNAP WITHOUT NOTICE. QNAP SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES ARISING OUT OF THE USE OF, OR OTHERWISE RELATED TO, THIS DOCUMENTATION OR ANY OTHER DOCUMENTATION. NOTHING CONTAINED IN THIS DOCUMENTATION IS INTENDED TO, NOR SHALL HAVE THE EFFECT OF, CREATING ANY WARRANTIES OR REPRESENTATIONS FROM QNAP (OR ITS SUPPLIERS OR LICENSORS), OR ALTERING THE TERMS AND CONDITIONS OF THE APPLICABLE LICENSE AGREEMENT GOVERNING THE USE OF QNAP SOFTWARE.

Table of Content

Introduction

Download Station 4.2.0 features add-on functionality to extend search, download and RSS functions. Add-on are developed using PHP and are controlled by the Download Station daemon. This document describes the Add-on architecture, features and how to develop them.

1.0.0 Add-on Directory

1.1.0   Default Volume

Depending on your NAS model, the default volume can be found using the following command:

```
[~] # /sbin/getcfg -f /etc/config/def_share.info SHARE_DEF defVolMP
/share/CACHEDEV1_DATA
[~] # export DEFAULT_VOLUME=`/sbin/getcfg -f /etc/config/def_share.info SHARE_DEF
defVolMP`
```

Every installed app is saved to the ${DEFAULT VOLUME}/.qpkg folder, and Download Station is located in the ${DEFAULT VOLUME}/.qpkg/DSv3 folder.

1.2.0   Add-on Installation

Download Station uses domain names for naming Add-ons. They can be found in ${DEFAULT VOLUME}/.qpkg/DSv3/Add-ons/.

```
[~] # ls -1 ${DEFAULT_VOLUME}/.qpkg/DSv3/usr/sbin/addons
btdigg.org/
bttiantang.com/
extratorrent.cc/
kickass.to/
mininova.org/
torrentreactor.net/
vertor.eu/
yun.baidu.com/
```

Each Add-on contains at least three types of files.

```
[~] # ls -1 ${DEFAULT_VOLUME}/.qpkg/usr/sbin/addons/btdigg.org/
 addon.json
addon.key
btdigg.org.php
```

The first one is an Add-on definition file named addon.json. This Add-on definition is nothing more than a metadata file in JSON format that contains properties including your Add-on's name, description, and version number. At a high level, we use it to tell Download Station what the Add-on is going to do. To learn more about the Add-on definition, read the Add-on Definition File Format documentation.

The second is an Add-on signature file named addon.key. This signature file is a standard RSA public key file and can be generated from an openssl command line tool. Before releasing your Add-on, a package utility named ds-addon-pack.sh will compress all the files in your Add-on folder and sign with the RSA private key.

The last file is your add-on entry. Download Station will verify and run this program using add-on definition. The ISite, IRSS, IVerify, ISearch and IDownload interface is defined in Download Station. Your add-on must at least extend ISite and implement a Download Station accessable constructor function and the other interfaces are optional.

 Add-ons only require those three files for base function. Put everything into your Add-on folder and the ds-addon-pack.sh utility will compress those files into a single file and sign it with RSA private key.

2.0.0 Add-on Definition

The Download Station Add-on definition file is called addon.json. Before running an Add-on, Download Station will check the definition file format, properties types and values. Some properties can also be used in the web control page to help the user differentiate between supported features. The following code shows the supported definition properties for Add-ons, with links to the section that discusses each property.

```
{
  "author": "QNAP",
  "website": "http://www.qnap.com",
  "name": "qnap.com",
  "addon": "qnap.com.php",
  "class": "qnap",
  "hosts": [ ... ],
  "domain": "qnap.com",
  "version": 100,
  "interface": [ ... ],
  "qpkg_dependencies": { ... },
  "description": { ... }
}
```

2.1.0 Author

Only strings are accepted. It can be the author's name, group or any other identifier.

2.2.0 Website

Only strings are accepted.

2.3.0 Name

Only strings are accepted. This is the display name of the add-on.

2.4.0 Addon

Only strings are accepted. This is the file name of your program entry. Download Station will load and run this file.

2.5.0 Class

Only strings are accepted. In the Add-on file, your program must implement ISite interface. Download Station will use this value to find the class and create a new runtime instance.

2.6.0 Hosts

Only string arrays are accepted. Many web sites have alias names or redirect settings. You can give more than one domain host. Download Station will use this value to determine a URL and apply UL to your Add-on program automatically.

2.7.0 Domain

Only strings are accepted. Download Station uses domain names for Add-on names. This value must be identical to your Add-on folder.

2.8.0 Version

Only integers are accepted. The minimum number is 100. If your version number is 12345 that will be displayed as `123.45` on the UI.

2.9.0 Interface

Only string arrays are accepted. Download Station has predefined several PHP interfaces (IRss, ISearch, IVerify, IDownload). To make Download Station know

which features are supported by your Add-on, implement the interfaces into you program entry and add definitions to the interface property.

2.10.0 Qpkg Dependencies

App name and version string pair list. If your Add-on will use another app or library, this property will inform users to install those apps before using the add-on. The default value in ds-addon is {"DownloadStation": "4.2.0"}

2.11.0 Description

Language name and description message pair list. You must at least provide an ENG description. All the languages supported by QTS are below.

ENG	English	ITA	Italiano
SCH	简体中文	JPN	日本語
TCH	繁體中文	KOR	한글
CZE	Czech	NOR	Norsk
DAN	Dansk	POL	Polski
GER	Deutsch	RUS	Русски
SPA	Español	FIN	Suomi
FRE	Français	SWE	Svenska
DUT	Nederlands	TUR	Turk dili
THA	ไทย	HUN	Magyar
POR	Português	GRK	Ελληνικά
ROM	Român		

3.0.0 Utility

3.1.0 ds-addon-pack.sh

This is an automatic compression and sign tool. Developer need use this tool to build a packaged and signed file.

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # ./ds-addon-pack.sh
Usage: ./ds-addon-pack.sh <private.pem> <public.pem> <addon folder>
private.pem: /usr/bin/openssl genrsa -out private.pem 1024
public.pem: /usr/bin/openssl rsa -in private.pem -out public.pem -outform PEM -
pubout
```

3.2.0 ds-addon

Download Station had implemented a utility named ds-addon. You   can find this utility in ${DEFAULT VOLUME}/.qpkg/DSv3/usr/sbin path. This utility can be used to list, install, enable or create an Add-on. This utility also can run and test your program.

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # ./ds-addon
Usage: ds-addon <option>
-h|--help
-a|--addons
-i|--install <addon file> [force 0|1]
-e|--enable <addon> [0|1]
-c|--create <domain name> <class name>
-r|--rss <addon> <url> [username] [password]
-v|--verify <addon> [username] [password]
-s|--search <addon> <keywork> [limit >= 50] [category] [username] [password]
-d|--download <addon> <url> [username] [password]
```

The ds-addon usage in the above example is very simple. <> means is required and [] is optional. To determine installed Add-ons, you can pass -a or -addons to ds-addon utility. For example:

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # ./ds-addon -a
   Array
   (
       [0] => btdigg.org (search)
       [1] => bttiantang.com (search, download)
       [2] => extratorrent.cc (search)
       [3] => kickass.to (search)
       [4] => mininova.org (search)
       [5] => torrentreactor.net (search)
       [6] => tudou.com (download)
       [7] => vertor.eu (rss, search, download)
       [8] => yun.baidu.com (download)
   )
```

In the above example, the ds-addon utility discovered every Add-on in ${DEFAULT VOLUME}/.qpkg/DSv3/usr/sbin/addons/ sub folders and verified Add-on definition files (addon.json) to get which features are supported. Finally, all lega information is printed to the console. For example, vertor.eu Add-on support rss parse, keyword search and url download.

Because Download Station uses domain name to differentiate Add-ons, the <addon> is the Add-on name which can list from -a or --addon parameter. If you wish run and test your Add-on, you can pass --rss, --verify, --search and --download parameter to do that. More rss, verify, search and download details will be mentioned in the develop section.

3.2.1 Error Code

When an error occurs, the utility will provide an error message. The utility will also return error codes to help developers to determine what type of error has occurred.

Decimal	Hexadecimal	Description
0	0x0000	Everything is good
1	0x0001	Utility parameter error
2	0x0002	Other process is running same add-on
3	0x0003	Add-on is not found
4	0x0004	Add-on already exists
5	0x0005	Add-on is illegal
6	0x0006	Add-on signature or version compare failed
7	0x0007	Install Add-on failed
8	0x0008	Add-on class name is not same as definition
9	0x0009	Add-on definition syntax or value error
10	0x000A	Add-on occur exception at runtime
11	0x000B	Add-on is not enabled
12	0x000C	URL format is not regular
13	0x000D	Add definition interface has not implement
14	0x000E	Add-on parsing URL failed
15	0x000F	Add-on authentication failed
16	0x0010	Add-on only allow premium user account
17	0x0011	Download link format is not regular
18	0x0012	Search link format is not regular
19	0x0013	RSS link format is not regular
20	0x0014	Add-on dependency app or library not found
21	0x0015	Installed dependency app or library version is not regular
22	0x0016	Installed dependency app or library version too old

4.0.0 Add-on PHP Extension

4.1.0　ISite Interface

```
interface ISite {
      /*
       * @param {string} $url
       * @param {string} $username
       * @param {string} $password
       */
      public function __construct($url = null, $username = null, $password =
null);
   }
```

ISite is the most important interface of the Download Station Add-on. Download Station can create an Add-on instance and pass through URL, username and password using this standard constructor. How to use this data depends on the developer.

4.2.0　IRss Interface

```
interface IRss {
      /*
       * ReadRss()
       * @return {array} RssFeed array
       */
      public function ReadRss();
   }
```

For general websites, Download Station can parse RSS feed and URL. But sometimes, websites do not support regular RSS. The IRss interface can help Download Station to understand this data. To implement this interface, developers must transfer website data to a regular [RssFeed](#) array and return it to Download Station. And then Download Station can continue with verification and job schedule.

4.3.0　ISearch Interface

```
interface ISearch {
      /*
       * Search()
       * @param {string} $keyword
       * @param {integer} $limit
       * @param {string} $category
       * @return {array} SearchLink array
       */
      public function Search($keyword, $limit, $category);
   }
```

Like IRss interface, Download Station will verify SearchLink arrays, transfer data to JSON format and respond to the front-end invoker.

4.4.0　IVerify Interface

```
interface IVerify {
      /*
       * Verify()
       * @return {boolean}
       */
      public function Verify();
   }
```

Download Station check the username and password is correct via Verify() method.

4.5.0　IDownload Interface

```
interface IDownload {
      /*
       * GetDownloadLink()
       * @return {DownloadLink} DownloadLink object
       */
```

```
      public function GetDownloadLink();
  }
```

Download Station cannot parse URL from JavaScript, routing table, advance cookie rule and others. IDownload can help Download Station to know about where is the real downloading link.

4.6.0 RssFeed

```
final class RssFeed {
      public $link = "";
      public $title = "";
  }
```

Both $link and $title must be strings.

4.7.0 SearchLink class

```
final class SearchLink {
      public $src = "";
      public $link = "";
      public $name = "";
      public $size = 0;
      public $time;
      public $seeds = 0;
      public $peers = 0;
      public $category = "";
      public $enclosure_url = "";
  }
```

Both $link and $enclosure_url are URL strings. $link helps Download Station to know what contains this data and $enclosure_url is where data can be downloaded. $size must describe how many bytes of data will be downloaded. If $time is set, this must be a PHP DateTime instance, Download Station will convert it to a front end time string format. Except $seeds and peers are integers, others are strings.

4.8.0 DownloadLink class

```
final class DownloadLink {
      public $url = null;
      public $cookie = "";
      public $username = "";
      public $password = "";
      public $filename = "";
      public $base_name = "";
      public $post_data = "";
      public $ext_name = "";
      public $header = array();
      static $CONTENT_TYPE = array(
          "application/applixware" => ".aw",
          "application/atom+xml" => ".atom",
          "application/atomcat+xml" => ".atomcat",
          "application/atomsvc+xml" => ".atomsvc",
          "application/ccxml+xml," => ".ccxml",
          "application/cdmi-capability" => ".cdmia",
          "application/cdmi-container" => ".cdmic",
          "application/cdmi-domain" => ".cdmid",
          "application/cdmi-object" => ".cdmio",
          "application/cdmi-queue" => ".cdmiq",
          "application/cu-seeme" => ".cu",
          "application/davmount+xml" => ".davmount",
          "application/dssc+der" => ".dssc",
          "application/dssc+xml" => ".xdssc",
          "application/ecmascript" => ".es",
          "application/emma+xml" => ".emma",
          "application/epub+zip" => ".epub",
          "application/exi" => ".exi",
          "application/font-tdpfr" => ".pfr",
```

```
"application/hyperstudio" => ".stk",
"application/ipfix" => ".ipfix",
"application/java-archive" => ".jar",
"application/java-serialized-object" => ".ser",
"application/java-vm" => ".class",
"application/javascript" => ".js",
"application/json" => ".json",
"application/mac-binhex40" => ".hqx",
"application/mac-compactpro" => ".cpt",
"application/mads+xml" => ".mads",
"application/marc" => ".mrc",
"application/marcxml+xml" => ".mrcx",
"application/mathematica" => ".ma",
"application/mathml+xml" => ".mathml",
"application/mbox" => ".mbox",
"application/mediaservercontrol+xml" => ".mscml",
"application/metalink4+xml" => ".meta4",
"application/mets+xml" => ".mets",
"application/mods+xml" => ".mods",
"application/mp21" => ".m21",
"application/mp4" => ".mp4",
"application/msword" => ".doc",
"application/mxf" => ".mxf",
"application/oda" => ".oda",
"application/oebps-package+xml" => ".opf",
"application/ogg" => ".ogx",
"application/onenote" => ".onetoc",
"application/patch-ops-error+xml" => ".xer",
"application/pdf" => ".pdf",
"application/pgp-signature" => ".pgp",
"application/pics-rules" => ".prf",
"application/pkcs10" => ".p10",
"application/pkcs7-mime" => ".p7m",
"application/pkcs7-signature" => ".p7s",
"application/pkcs8" => ".p8",
"application/pkix-attr-cert" => ".ac",
"application/pkix-cert" => ".cer",
"application/pkix-crl" => ".crl",
"application/pkix-pkipath" => ".pkipath",
"application/pkixcmp" => ".pki",
"application/pls+xml" => ".pls",
"application/postscript" => ".ai",
"application/prs.cww" => ".cww",
"application/pskc+xml" => ".pskcxml",
"application/rdf+xml" => ".rdf",
"application/reginfo+xml" => ".rif",
"application/relax-ng-compact-syntax" => ".rnc",
"application/resource-lists-diff+xml" => ".rld",
"application/resource-lists+xml" => ".rl",
"application/rls-services+xml" => ".rs",
"application/rsd+xml" => ".rsd",
"application/rss+xml" => ".rss",
"application/rtf" => ".rtf",
"application/sbml+xml" => ".sbml",
"application/scvp-cv-request" => ".scq",
"application/scvp-cv-response" => ".scs",
"application/scvp-vp-request" => ".spq",
"application/scvp-vp-response" => ".spp",
"application/sdp" => ".sdp",
"application/set-payment-initiation" => ".setpay",
"application/set-registration-initiation" => ".setreg",
"application/shf+xml" => ".shf",
"application/smil+xml" => ".smi",
"application/sparql-query" => ".rq",
"application/sparql-results+xml" => ".srx",
"application/srgs" => ".gram",
```

```
            "application/srgs+xml" => ".grxml",
            "application/sru+xml" => ".sru",
            "application/ssml+xml" => ".ssml",
            "application/tei+xml" => ".tei",
            "application/thraud+xml" => ".tfi",
            "application/timestamped-data" => ".tsd",
            "application/vnd.3gpp.pic-bw-large" => ".plb",
            "application/vnd.3gpp.pic-bw-small" => ".psb",
            "application/vnd.3gpp.pic-bw-var" => ".pvb",
            "application/vnd.3gpp2.tcap" => ".tcap",
            "application/vnd.3m.post-it-notes" => ".pwn",
            "application/vnd.accpac.simply.aso" => ".aso",
            "application/vnd.accpac.simply.imp" => ".imp",
            "application/vnd.acucobol" => ".acu",
            "application/vnd.acucorp" => ".atc",
            "application/vnd.adobe.air-application-installer-package+zip" =>
".air",
            "application/vnd.adobe.fxp" => ".fxp",
            "application/vnd.adobe.xdp+xml" => ".xdp",
            "application/vnd.adobe.xfdf" => ".xfdf",
            "application/vnd.ahead.space" => ".ahead",
            "application/vnd.airzip.filesecure.azf" => ".azf",
            "application/vnd.airzip.filesecure.azs" => ".azs",
            "application/vnd.amazon.ebook" => ".azw",
            "application/vnd.americandynamics.acc" => ".acc",
            "application/vnd.amiga.ami" => ".ami",
            "application/vnd.android.package-archive" => ".apk",
            "application/vnd.anser-web-certificate-issue-initiation" => ".cii",
            "application/vnd.anser-web-funds-transfer-initiation" => ".fti",
            "application/vnd.antix.game-component" => ".atx",
            "application/vnd.apple.installer+xml" => ".mpkg",
            "application/vnd.apple.mpegurl" => ".m3u8",
            "application/vnd.aristanetworks.swi" => ".swi",
            "application/vnd.audiograph" => ".aep",
            "application/vnd.blueice.multipass" => ".mpm",
            "application/vnd.bmi" => ".bmi",
            "application/vnd.businessobjects" => ".rep",
            "application/vnd.chemdraw+xml" => ".cdxml",
            "application/vnd.chipnuts.karaoke-mmd" => ".mmd",
            "application/vnd.cinderella" => ".cdy",
            "application/vnd.claymore" => ".cla",
            "application/vnd.cloanto.rp9" => ".rp9",
            "application/vnd.clonk.c4group" => ".c4g",
            "application/vnd.cluetrust.cartomobile-config" => ".c11amc",
            "application/vnd.cluetrust.cartomobile-config-pkg" => ".c11amz",
            "application/vnd.commonspace" => ".csp",
            "application/vnd.contact.cmsg" => ".cdbcmsg",
            "application/vnd.cosmocaller" => ".cmc",
            "application/vnd.crick.clicker" => ".clkx",
            "application/vnd.crick.clicker.keyboard" => ".clkk",
            "application/vnd.crick.clicker.palette" => ".clkp",
            "application/vnd.crick.clicker.template" => ".clkt",
            "application/vnd.crick.clicker.wordbank" => ".clkw",
            "application/vnd.criticaltools.wbs+xml" => ".wbs",
            "application/vnd.ctc-posml" => ".pml",
            "application/vnd.cups-ppd" => ".ppd",
            "application/vnd.curl.car" => ".car",
            "application/vnd.curl.pcurl" => ".pcurl",
            "application/vnd.data-vision.rdz" => ".rdz",
            "application/vnd.denovo.fcselayout-link" => ".fe_launch",
            "application/vnd.dna" => ".dna",
            "application/vnd.dolby.mlp" => ".mlp",
            "application/vnd.dpgraph" => ".dpg",
            "application/vnd.dreamfactory" => ".dfac",
            "application/vnd.dvb.ait" => ".ait",
            "application/vnd.dvb.service" => ".svc",
```

```
"application/vnd.dynageo" => ".geo",
"application/vnd.ecowin.chart" => ".mag",
"application/vnd.enliven" => ".nml",
"application/vnd.epson.esf" => ".esf",
"application/vnd.epson.msf" => ".msf",
"application/vnd.epson.quickanime" => ".qam",
"application/vnd.epson.salt" => ".slt",
"application/vnd.epson.ssf" => ".ssf",
"application/vnd.eszigno3+xml" => ".es3",
"application/vnd.ezpix-album" => ".ez2",
"application/vnd.ezpix-package" => ".ez3",
"application/vnd.fdf" => ".fdf",
"application/vnd.fdsn.seed" => ".seed",
"application/vnd.flographit" => ".gph",
"application/vnd.fluxtime.clip" => ".ftc",
"application/vnd.framemaker" => ".fm",
"application/vnd.frogans.fnc" => ".fnc",
"application/vnd.frogans.ltf" => ".ltf",
"application/vnd.fsc.weblaunch" => ".fsc",
"application/vnd.fujitsu.oasys" => ".oas",
"application/vnd.fujitsu.oasys2" => ".oa2",
"application/vnd.fujitsu.oasys3" => ".oa3",
"application/vnd.fujitsu.oasysgp" => ".fg5",
"application/vnd.fujitsu.oasysprs" => ".bh2",
"application/vnd.fujixerox.ddd" => ".ddd",
"application/vnd.fujixerox.docuworks" => ".xdw",
"application/vnd.fujixerox.docuworks.binder" => ".xbd",
"application/vnd.fuzzysheet" => ".fzs",
"application/vnd.genomatix.tuxedo" => ".txd",
"application/vnd.geogebra.file" => ".ggb",
"application/vnd.geogebra.tool" => ".ggt",
"application/vnd.geometry-explorer" => ".gex",
"application/vnd.geonext" => ".gxt",
"application/vnd.geoplan" => ".g2w",
"application/vnd.geospace" => ".g3w",
"application/vnd.gmx" => ".gmx",
"application/vnd.google-earth.kml+xml" => ".kml",
"application/vnd.google-earth.kmz" => ".kmz",
"application/vnd.grafeq" => ".gqf",
"application/vnd.groove-account" => ".gac",
"application/vnd.groove-help" => ".ghf",
"application/vnd.groove-identity-message" => ".gim",
"application/vnd.groove-injector" => ".grv",
"application/vnd.groove-tool-message" => ".gtm",
"application/vnd.groove-tool-template" => ".tpl",
"application/vnd.groove-vcard" => ".vcg",
"application/vnd.hal+xml" => ".hal",
"application/vnd.handheld-entertainment+xml" => ".zmm",
"application/vnd.hbci" => ".hbci",
"application/vnd.hhe.lesson-player" => ".les",
"application/vnd.hp-hpgl" => ".hpgl",
"application/vnd.hp-hpid" => ".hpid",
"application/vnd.hp-hps" => ".hps",
"application/vnd.hp-jlyt" => ".jlt",
"application/vnd.hp-pcl" => ".pcl",
"application/vnd.hp-pclxl" => ".pclxl",
"application/vnd.hydrostatix.sof-data" => ".sfd-hdstx",
"application/vnd.hzn-3d-crossword" => ".x3d",
"application/vnd.ibm.minipay" => ".mpy",
"application/vnd.ibm.modcap" => ".afp",
"application/vnd.ibm.rights-management" => ".irm",
"application/vnd.ibm.secure-container" => ".sc",
"application/vnd.iccprofile" => ".icc",
"application/vnd.igloader" => ".igl",
"application/vnd.immervision-ivp" => ".ivp",
"application/vnd.immervision-ivu" => ".ivu",
```

```
"application/vnd.insors.igm" => ".igm",
"application/vnd.intercon.formnet" => ".xpw",
"application/vnd.intergeo" => ".i2g",
"application/vnd.intu.qbo" => ".qbo",
"application/vnd.intu.qfx" => ".qfx",
"application/vnd.ipunplugged.rcprofile" => ".rcprofile",
"application/vnd.irepository.package+xml" => ".irp",
"application/vnd.is-xpr" => ".xpr",
"application/vnd.isac.fcs" => ".fcs",
"application/vnd.jam" => ".jam",
"application/vnd.jcp.javame.midlet-rms" => ".rms",
"application/vnd.jisp" => ".jisp",
"application/vnd.joost.joda-archive" => ".joda",
"application/vnd.kahootz" => ".ktz",
"application/vnd.kde.karbon" => ".karbon",
"application/vnd.kde.kchart" => ".chrt",
"application/vnd.kde.kformula" => ".kfo",
"application/vnd.kde.kivio" => ".flw",
"application/vnd.kde.kontour" => ".kon",
"application/vnd.kde.kpresenter" => ".kpr",
"application/vnd.kde.kspread" => ".ksp",
"application/vnd.kde.kword" => ".kwd",
"application/vnd.kenameaapp" => ".htke",
"application/vnd.kidspiration" => ".kia",
"application/vnd.kinar" => ".kne",
"application/vnd.koan" => ".skp",
"application/vnd.kodak-descriptor" => ".sse",
"application/vnd.las.las+xml" => ".lasxml",
"application/vnd.llamagraphics.life-balance.desktop" => ".lbd",
"application/vnd.llamagraphics.life-balance.exchange+xml" => ".lbe",
"application/vnd.lotus-1-2-3" => "0.123",
"application/vnd.lotus-approach" => ".apr",
"application/vnd.lotus-freelance" => ".pre",
"application/vnd.lotus-notes" => ".nsf",
"application/vnd.lotus-organizer" => ".org",
"application/vnd.lotus-screencam" => ".scm",
"application/vnd.lotus-wordpro" => ".lwp",
"application/vnd.macports.portpkg" => ".portpkg",
"application/vnd.mcd" => ".mcd",
"application/vnd.medcalcdata" => ".mc1",
"application/vnd.mediastation.cdkey" => ".cdkey",
"application/vnd.mfer" => ".mwf",
"application/vnd.mfmp" => ".mfm",
"application/vnd.micrografx.flo" => ".flo",
"application/vnd.micrografx.igx" => ".igx",
"application/vnd.mif" => ".mif",
"application/vnd.mobius.daf" => ".daf",
"application/vnd.mobius.dis" => ".dis",
"application/vnd.mobius.mbk" => ".mbk",
"application/vnd.mobius.mqy" => ".mqy",
"application/vnd.mobius.msl" => ".msl",
"application/vnd.mobius.plc" => ".plc",
"application/vnd.mobius.txf" => ".txf",
"application/vnd.mophun.application" => ".mpn",
"application/vnd.mophun.certificate" => ".mpc",
"application/vnd.mozilla.xul+xml" => ".xul",
"application/vnd.ms-artgalry" => ".cil",
"application/vnd.ms-cab-compressed" => ".cab",
"application/vnd.ms-excel" => ".xls",
"application/vnd.ms-excel.addin.macroenabled.12" => ".xlam",
"application/vnd.ms-excel.sheet.binary.macroenabled.12" => ".xlsb",
"application/vnd.ms-excel.sheet.macroenabled.12" => ".xlsm",
"application/vnd.ms-excel.template.macroenabled.12" => ".xltm",
"application/vnd.ms-fontobject" => ".eot",
"application/vnd.ms-htmlhelp" => ".chm",
"application/vnd.ms-ims" => ".ims",
```

```
        "application/vnd.ms-lrm" => ".lrm",
        "application/vnd.ms-officetheme" => ".thmx",
        "application/vnd.ms-pki.seccat" => ".cat",
        "application/vnd.ms-pki.stl" => ".stl",
        "application/vnd.ms-powerpoint" => ".ppt",
        "application/vnd.ms-powerpoint.addin.macroenabled.12" => ".ppam",
        "application/vnd.ms-powerpoint.presentation.macroenabled.12" =>
".pptm",
        "application/vnd.ms-powerpoint.slide.macroenabled.12" => ".sldm",
        "application/vnd.ms-powerpoint.slideshow.macroenabled.12" => ".ppsm",
        "application/vnd.ms-powerpoint.template.macroenabled.12" => ".potm",
        "application/vnd.ms-project" => ".mpp",
        "application/vnd.ms-word.document.macroenabled.12" => ".docm",
        "application/vnd.ms-word.template.macroenabled.12" => ".dotm",
        "application/vnd.ms-works" => ".wps",
        "application/vnd.ms-wpl" => ".wpl",
        "application/vnd.ms-xpsdocument" => ".xps",
        "application/vnd.mseq" => ".mseq",
        "application/vnd.musician" => ".mus",
        "application/vnd.muvee.style" => ".msty",
        "application/vnd.neurolanguage.nlu" => ".nlu",
        "application/vnd.noblenet-directory" => ".nnd",
        "application/vnd.noblenet-sealer" => ".nns",
        "application/vnd.noblenet-web" => ".nnw",
        "application/vnd.nokia.n-gage.data" => ".ngdat",
        "application/vnd.nokia.n-gage.symbian.install" => ".n-gage",
        "application/vnd.nokia.radio-preset" => ".rpst",
        "application/vnd.nokia.radio-presets" => ".rpss",
        "application/vnd.novadigm.edm" => ".edm",
        "application/vnd.novadigm.edx" => ".edx",
        "application/vnd.novadigm.ext" => ".ext",
        "application/vnd.oasis.opendocument.chart" => ".odc",
        "application/vnd.oasis.opendocument.chart-template" => ".otc",
        "application/vnd.oasis.opendocument.database" => ".odb",
        "application/vnd.oasis.opendocument.formula" => ".odf",
        "application/vnd.oasis.opendocument.formula-template" => ".odft",
        "application/vnd.oasis.opendocument.graphics" => ".odg",
        "application/vnd.oasis.opendocument.graphics-template" => ".otg",
        "application/vnd.oasis.opendocument.image" => ".odi",
        "application/vnd.oasis.opendocument.image-template" => ".oti",
        "application/vnd.oasis.opendocument.presentation" => ".odp",
        "application/vnd.oasis.opendocument.presentation-template" => ".otp",
        "application/vnd.oasis.opendocument.spreadsheet" => ".ods",
        "application/vnd.oasis.opendocument.spreadsheet-template" => ".ots",
        "application/vnd.oasis.opendocument.text" => ".odt",
        "application/vnd.oasis.opendocument.text-master" => ".odm",
        "application/vnd.oasis.opendocument.text-template" => ".ott",
        "application/vnd.oasis.opendocument.text-web" => ".oth",
        "application/vnd.olpc-sugar" => ".xo",
        "application/vnd.oma.dd2+xml" => ".dd2",
        "application/vnd.openofficeorg.extension" => ".oxt",
        "application/vnd.openxmlformats-
officedocument.presentationml.presentation" => ".pptx",
        "application/vnd.openxmlformats-officedocument.presentationml.slide" =>
".sldx",
        "application/vnd.openxmlformats-
officedocument.presentationml.slideshow" => ".ppsx",
        "application/vnd.openxmlformats-officedocument.presentationml.template"
=> ".potx",
        "application/vnd.openxmlformats-officedocument.spreadsheetml.sheet" =>
".xlsx",
        "application/vnd.openxmlformats-officedocument.spreadsheetml.template"
=> ".xltx",
        "application/vnd.openxmlformats-
officedocument.wordprocessingml.document" => ".docx",
        "application/vnd.openxmlformats-
```

```
officedocument.wordprocessingml.template" => ".dotx",
            "application/vnd.osgeo.mapguide.package" => ".mgp",
            "application/vnd.osgi.dp" => ".dp",
            "application/vnd.palm" => ".pdb",
            "application/vnd.pawaafile" => ".paw",
            "application/vnd.pg.format" => ".str",
            "application/vnd.pg.osasli" => ".ei6",
            "application/vnd.picsel" => ".efif",
            "application/vnd.pmi.widget" => ".wg",
            "application/vnd.pocketlearn" => ".plf",
            "application/vnd.powerbuilder6" => ".pbd",
            "application/vnd.previewsystems.box" => ".box",
            "application/vnd.proteus.magazine" => ".mgz",
            "application/vnd.publishare-delta-tree" => ".qps",
            "application/vnd.pvi.ptid1" => ".ptid",
            "application/vnd.quark.quarkxpress" => ".qxd",
            "application/vnd.realvnc.bed" => ".bed",
            "application/vnd.recordare.musicxml" => ".mxl",
            "application/vnd.recordare.musicxml+xml" => ".musicxml",
            "application/vnd.rig.cryptonote" => ".cryptonote",
            "application/vnd.rim.cod" => ".cod",
            "application/vnd.rn-realmedia" => ".rm",
            "application/vnd.route66.link66+xml" => ".link66",
            "application/vnd.sailingtracker.track" => ".st",
            "application/vnd.seemail" => ".see",
            "application/vnd.sema" => ".sema",
            "application/vnd.semd" => ".semd",
            "application/vnd.semf" => ".semf",
            "application/vnd.shana.informed.formdata" => ".ifm",
            "application/vnd.shana.informed.formtemplate" => ".itp",
            "application/vnd.shana.informed.interchange" => ".iif",
            "application/vnd.shana.informed.package" => ".ipk",
            "application/vnd.simtech-mindmapper" => ".twd",
            "application/vnd.smaf" => ".mmf",
            "application/vnd.smart.teacher" => ".teacher",
            "application/vnd.solent.sdkm+xml" => ".sdkm",
            "application/vnd.spotfire.dxp" => ".dxp",
            "application/vnd.spotfire.sfs" => ".sfs",
            "application/vnd.stardivision.calc" => ".sdc",
            "application/vnd.stardivision.draw" => ".sda",
            "application/vnd.stardivision.impress" => ".sdd",
            "application/vnd.stardivision.math" => ".smf",
            "application/vnd.stardivision.writer" => ".sdw",
            "application/vnd.stardivision.writer-global" => ".sgl",
            "application/vnd.stepmania.stepchart" => ".sm",
            "application/vnd.sun.xml.calc" => ".sxc",
            "application/vnd.sun.xml.calc.template" => ".stc",
            "application/vnd.sun.xml.draw" => ".sxd",
            "application/vnd.sun.xml.draw.template" => ".std",
            "application/vnd.sun.xml.impress" => ".sxi",
            "application/vnd.sun.xml.impress.template" => ".sti",
            "application/vnd.sun.xml.math" => ".sxm",
            "application/vnd.sun.xml.writer" => ".sxw",
            "application/vnd.sun.xml.writer.global" => ".sxg",
            "application/vnd.sun.xml.writer.template" => ".stw",
            "application/vnd.sus-calendar" => ".sus",
            "application/vnd.svd" => ".svd",
            "application/vnd.symbian.install" => ".sis",
            "application/vnd.syncml.dm+wbxml" => ".bdm",
            "application/vnd.syncml.dm+xml" => ".xdm",
            "application/vnd.syncml+xml" => ".xsm",
            "application/vnd.tao.intent-module-archive" => ".tao",
            "application/vnd.tmobile-livetv" => ".tmo",
            "application/vnd.trid.tpt" => ".tpt",
            "application/vnd.triscape.mxs" => ".mxs",
            "application/vnd.trueapp" => ".tra",
```

```
"application/vnd.ufdl" => ".ufd",
"application/vnd.uiq.theme" => ".utz",
"application/vnd.umajin" => ".umj",
"application/vnd.unity" => ".unityweb",
"application/vnd.uoml+xml" => ".uoml",
"application/vnd.vcx" => ".vcx",
"application/vnd.visio" => ".vsd",
"application/vnd.visionary" => ".vis",
"application/vnd.vsf" => ".vsf",
"application/vnd.wap.wbxml" => ".wbxml",
"application/vnd.wap.wmlc" => ".wmlc",
"application/vnd.wap.wmlscriptc" => ".wmlsc",
"application/vnd.webturbo" => ".wtb",
"application/vnd.wolfram.player" => ".nbp",
"application/vnd.wordperfect" => ".wpd",
"application/vnd.wqd" => ".wqd",
"application/vnd.wt.stf" => ".stf",
"application/vnd.xara" => ".xar",
"application/vnd.xfdl" => ".xfdl",
"application/vnd.yamaha.hv-dic" => ".hvd",
"application/vnd.yamaha.hv-script" => ".hvs",
"application/vnd.yamaha.hv-voice" => ".hvp",
"application/vnd.yamaha.openscoreformat" => ".osf",
"application/vnd.yamaha.openscoreformat.osfpvg+xml" => ".osfpvg",
"application/vnd.yamaha.smaf-audio" => ".saf",
"application/vnd.yamaha.smaf-phrase" => ".spf",
"application/vnd.yellowriver-custom-menu" => ".cmp",
"application/vnd.zul" => ".zir",
"application/vnd.zzazz.deck+xml" => ".zaz",
"application/voicexml+xml" => ".vxml",
"application/widget" => ".wgt",
"application/winhlp" => ".hlp",
"application/wsdl+xml" => ".wsdl",
"application/wspolicy+xml" => ".wspolicy",
"application/x-7z-compressed" => ".7z",
"application/x-abiword" => ".abw",
"application/x-ace-compressed" => ".ace",
"application/x-authorware-bin" => ".aab",
"application/x-authorware-map" => ".aam",
"application/x-authorware-seg" => ".aas",
"application/x-bcpio" => ".bcpio",
"application/x-bittorrent" => ".torrent",
"application/x-bzip" => ".bz",
"application/x-bzip2" => ".bz2",
"application/x-cdlink" => ".vcd",
"application/x-chat" => ".chat",
"application/x-chess-pgn" => ".pgn",
"application/x-cpio" => ".cpio",
"application/x-csh" => ".csh",
"application/x-debian-package" => ".deb",
"application/x-director" => ".dir",
"application/x-doom" => ".wad",
"application/x-dtbncx+xml" => ".ncx",
"application/x-dtbook+xml" => ".dtb",
"application/x-dtbresource+xml" => ".res",
"application/x-dvi" => ".dvi",
"application/x-font-bdf" => ".bdf",
"application/x-font-ghostscript" => ".gsf",
"application/x-font-linux-psf" => ".psf",
"application/x-font-otf" => ".otf",
"application/x-font-pcf" => ".pcf",
"application/x-font-snf" => ".snf",
"application/x-font-ttf" => ".ttf",
"application/x-font-type1" => ".pfa",
"application/x-font-woff" => ".woff",
"application/x-futuresplash" => ".spl",
```

```
"application/x-gnumeric" => ".gnumeric",
"application/x-gtar" => ".gtar",
"application/x-hdf" => ".hdf",
"application/x-java-jnlp-file" => ".jnlp",
"application/x-latex" => ".latex",
"application/x-mobipocket-ebook" => ".prc",
"application/x-ms-application" => ".application",
"application/x-ms-wmd" => ".wmd",
"application/x-ms-wmz" => ".wmz",
"application/x-ms-xbap" => ".xbap",
"application/x-msaccess" => ".mdb",
"application/x-msbinder" => ".obd",
"application/x-mscardfile" => ".crd",
"application/x-msclip" => ".clp",
"application/x-msdownload" => ".exe",
"application/x-msmediaview" => ".mvb",
"application/x-msmetafile" => ".wmf",
"application/x-msmoney" => ".mny",
"application/x-mspublisher" => ".pub",
"application/x-msschedule" => ".scd",
"application/x-msterminal" => ".trm",
"application/x-mswrite" => ".wri",
"application/x-netcdf" => ".nc",
"application/x-pkcs12" => ".p12",
"application/x-pkcs7-certificates" => ".p7b",
"application/x-pkcs7-certreqresp" => ".p7r",
"application/x-rar-compressed" => ".rar",
"application/x-sh" => ".sh",
"application/x-shar" => ".shar",
"application/x-shockwave-flash" => ".swf",
"application/x-silverlight-app" => ".xap",
"application/x-stuffit" => ".sit",
"application/x-stuffitx" => ".sitx",
"application/x-sv4cpio" => ".sv4cpio",
"application/x-sv4crc" => ".sv4crc",
"application/x-tar" => ".tar",
"application/x-tcl" => ".tcl",
"application/x-tex" => ".tex",
"application/x-tex-tfm" => ".tfm",
"application/x-texinfo" => ".texinfo",
"application/x-ustar" => ".ustar",
"application/x-wais-source" => ".src",
"application/x-x509-ca-cert" => ".der",
"application/x-xfig" => ".fig",
"application/x-xpinstall" => ".xpi",
"application/xcap-diff+xml" => ".xdf",
"application/xenc+xml" => ".xenc",
"application/xhtml+xml" => ".xhtml",
"application/xml" => ".xml",
"application/xml-dtd" => ".dtd",
"application/xop+xml" => ".xop",
"application/xslt+xml" => ".xslt",
"application/xspf+xml" => ".xspf",
"application/xv+xml" => ".mxml",
"application/yang" => ".yang",
"application/yin+xml" => ".yin",
"application/zip" => ".zip",
"audio/adpcm" => ".adp",
"audio/basic" => ".au",
"audio/midi" => ".mid",
"audio/mp4" => ".mp4a",
"audio/mpeg" => ".mp3",
"audio/ogg" => ".oga",
"audio/vnd.dece.audio" => ".uva",
"audio/vnd.digital-winds" => ".eol",
"audio/vnd.dra" => ".dra",
```

```
                "audio/vnd.dts" => ".dts",
                "audio/vnd.dts.hd" => ".dtshd",
                "audio/vnd.lucent.voice" => ".lvp",
                "audio/vnd.ms-playready.media.pya" => ".pya",
                "audio/vnd.nuera.ecelp4800" => ".ecelp4800",
                "audio/vnd.nuera.ecelp7470" => ".ecelp7470",
                "audio/vnd.nuera.ecelp9600" => ".ecelp9600",
                "audio/vnd.rip" => ".rip",
                "audio/webm" => ".weba",
                "audio/x-aac" => ".aac",
                "audio/x-aiff" => ".aif",
                "audio/x-mpegurl" => ".m3u",
                "audio/x-ms-wax" => ".wax",
                "audio/x-ms-wma" => ".wma",
                "audio/x-pn-realaudio" => ".ram",
                "audio/x-pn-realaudio-plugin" => ".rmp",
                "audio/x-wav" => ".wav",
                "chemical/x-cdx" => ".cdx",
                "chemical/x-cif" => ".cif",
                "chemical/x-cmdf" => ".cmdf",
                "chemical/x-cml" => ".cml",
                "chemical/x-csml" => ".csml",
                "chemical/x-xyz" => ".xyz",
                "image/bmp" => ".bmp",
                "image/cgm" => ".cgm",
                "image/g3fax" => ".g3",
                "image/gif" => ".gif",
                "image/ief" => ".ief",
                "image/jpeg" => ".jpeg",
                "image/ktx" => ".ktx",
                "image/png" => ".png",
                "image/prs.btif" => ".btif",
                "image/svg+xml" => ".svg",
                "image/tiff" => ".tiff",
                "image/vnd.adobe.photoshop" => ".psd",
                "image/vnd.dece.graphic" => ".uvi",
                "image/vnd.djvu" => ".djvu",
                "image/vnd.dvb.subtitle" => ".sub",
                "image/vnd.dwg" => ".dwg",
                "image/vnd.dxf" => ".dxf",
                "image/vnd.fastbidsheet" => ".fbs",
                "image/vnd.fpx" => ".fpx",
                "image/vnd.fst" => ".fst",
                "image/vnd.fujixerox.edmics-mmr" => ".mmr",
                "image/vnd.fujixerox.edmics-rlc" => ".rlc",
                "image/vnd.ms-modi" => ".mdi",
                "image/vnd.net-fpx" => ".npx",
                "image/vnd.wap.wbmp" => ".wbmp",
                "image/vnd.xiff" => ".xif",
                "image/webp" => ".webp",
                "image/x-cmu-raster" => ".ras",
                "image/x-cmx" => ".cmx",
                "image/x-freehand" => ".fh",
                "image/x-icon" => ".ico",
                "image/x-pcx" => ".pcx",
                "image/x-pict" => ".pic",
                "image/x-portable-anymap" => ".pnm",
                "image/x-portable-bitmap" => ".pbm",
                "image/x-portable-graymap" => ".pgm",
                "image/x-portable-pixmap" => ".ppm",
                "image/x-rgb" => ".rgb",
                "image/x-xbitmap" => ".xbm",
                "image/x-xpixmap" => ".xpm",
                "image/x-xwindowdump" => ".xwd",
                "message/rfc822" => ".eml",
                "model/iges" => ".igs",
```

```
                "model/mesh" => ".msh",
                "model/vnd.collada+xml" => ".dae",
                "model/vnd.dwf" => ".dwf",
                "model/vnd.gdl" => ".gdl",
                "model/vnd.gtw" => ".gtw",
                "model/vnd.mts" => ".mts",
                "model/vnd.vtu" => ".vtu",
                "model/vrml" => ".wrl",
                "text/calendar" => ".ics",
                "text/css" => ".css",
                "text/csv" => ".csv",
                "text/html" => ".html",
                "text/n3" => ".n3",
                "text/plain-bas" => ".par",
                "text/prs.lines.tag" => ".dsc",
                "text/richtext" => ".rtx",
                "text/sgml" => ".sgml",
                "text/tab-separated-values" => ".tsv",
                "text/troff" => ".t",
                "text/turtle" => ".ttl",
                "text/uri-list" => ".uri",
                "text/vnd.curl" => ".curl",
                "text/vnd.curl.dcurl" => ".dcurl",
                "text/vnd.curl.mcurl" => ".mcurl",
                "text/vnd.curl.scurl" => ".scurl",
                "text/vnd.fly" => ".fly",
                "text/vnd.fmi.flexstor" => ".flx",
                "text/vnd.graphviz" => ".gv",
                "text/vnd.in3d.3dml" => ".3dml",
                "text/vnd.in3d.spot" => ".spot",
                "text/vnd.sun.j2me.app-descriptor" => ".jad",
                "text/vnd.wap.wml" => ".wml",
                "text/vnd.wap.wmlscript" => ".wmls",
                "text/x-asm" => ".s",
                "text/x-c" => ".c",
                "text/x-fortran" => ".f",
                "text/x-java-source,java" => ".java",
                "text/x-pascal" => ".p",
                "text/x-setext" => ".etx",
                "text/x-uuencode" => ".uu",
                "text/x-vcalendar" => ".vcs",
                "text/x-vcard" => ".vcf",
                "text/xml" => ".xml",
                "text/yaml" => ".yaml",
                "video/3gpp" => ".3gp",
                "video/3gpp2" => ".3g2",
                "video/h261" => ".h261",
                "video/h263" => ".h263",
                "video/h264" => ".h264",
                "video/jpeg" => ".jpgv",
                "video/jpm" => ".jpm",
                "video/mj2" => ".mj2",
                "video/mp4" => ".mp4",
                "video/mpeg" => ".mpeg",
                "video/ogg" => ".ogv",
                "video/quicktime" => ".qt",
                "video/vnd.dece.hd" => ".uvh",
                "video/vnd.dece.mobile" => ".uvm",
                "video/vnd.dece.pd" => ".uvp",
                "video/vnd.dece.sd" => ".uvs",
                "video/vnd.dece.video" => ".uvv",
                "video/vnd.fvt" => ".fvt",
                "video/vnd.mpegurl" => ".mxu",
                "video/vnd.ms-playready.media.pyv" => ".pyv",
                "video/vnd.uvvu.mp4" => ".uvu",
                "video/vnd.vivo" => ".viv",
```

```
            "video/webm" => ".webm",
            "video/x-f4v" => ".f4v",
            "video/x-fli" => ".fli",
            "video/x-flv" => ".flv",
            "video/x-m4v" => ".m4v",
            "video/x-ms-asf" => ".asf",
            "video/x-ms-wm" => ".wm",
            "video/x-ms-wmv" => ".wmv",
            "video/x-ms-wmx" => ".wmx",
            "video/x-ms-wvx" => ".wvx",
            "video/x-msvideo" => ".avi",
            "video/x-sgi-movie" => ".movie",
            "x-conference/x-cooltalk" => ".ice"
        );
        public function __construct($url = null, $header = null, $cookie = null);
    }
```

DownloadLink is not only used as an IDownload interface return value. Using the constructor method also determines the filename from Content-Disposition or URL. If the filename extension does not exist, DownloadLink will try to use the DownloadLink::$CONTENT_TYPE predefined value to match the Content-Type value and use the matched result as the filename extension. The $post_data can be kept empty or formatted as "a=1&b=2". If a website needs cookies to verify a download link, the $cookie can be format as "A=01;B=02;C=03" to pass verification. $filename must be "$base_name.$ext_name". If DownloadLink cannot generate these properties, developers can customize those values.

4.9.0   Ajax class

```
final class Ajax {
const AGENT = "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_9_1) AppleWebKit/537.36
(KHTML, like Gecko) Chrome/32.0.1700.107 Safari/537.36";
        /*
         * Cleanup cookie value.
         */
        public function ResetCookie();
        /*
         * Emulate ExtJS ajax to do HTTP/FTP request.
         * If give non null $callback value will feedback
         * request header, response header, cookie value,
         * content data and last redirect url.
         *
         * @param {array} $options An object containing properties which are used
as parameters to the request.
         * @param {callback} $callback The function to be called upon receipt of
response.
         * @return {boolean}
         */
        public function Request($options, $callback = null);
    }
```

Processing URL requests and responses is complex. Download Station has implemented an Ajax class to emulate ExtJS ajax requests. In many cases, websites will use local cookies to keep some information and verify them to remote servers. So, Ajax will store and override existing cookie values continuously until developers use the ResetCookie() method to clean up the cookie value. Developers can also override cookies without ResetCookie() using the $options parameter, that behavior is more like a website using JavaScript to create a cookie value. The Ajax requests $options and $callback as below.

4.9.1 Options

Optional	Parameter	Type	Descriptio
Yes	body	boolean	Default is true, if value is false, Ajax will send HTTP HEAD method but not all website support that.
Yes	post	boolean	Default is false, if value is false, Ajax will format params to HTTP GET method otherwise use HTTP POST method.
Yes	params	object	Default is null, An object containing properties which are used as parameters to the request.
Yes	cookie	string array	Default is null, Each element must be paired as "key=value".
Yes	follow	integer	Default is 20, How many url redirect will be accepted.
Yes	header	object	Default is empty, Customize HTTP request header.
Yes	timeout	integer	Default is 20, This value must between 1 and 20 seconds.

4.9.2 Callback

```
/*
 * @param {string} $request HTTP request header
 * @param {array} $header first received header will be last string element
 * @param {array} $cookie refer to options cookie value
 * @param {string} $body HTTP response data
 * @param {string} $effective_url last HTTP redirect URL
 */
function($request, $header, $cookie, $body, $effective_url);
```

5.0.0 Develop

5.1.0   Beginner

When creating an add-on for the first time, <u>ds-Add-on</u> provides a simple way to create an empty Add-on. In the below example, we choose torrentreactor.net torrent search site to describe how to do so.

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # ./ds-addon -c torrentreactor.net
torrentreactor
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # ls -al addons/torrentreactor.net
drwxr-xr-x    2 admin    administ      4096 Feb 11 09:45 ./
drwxr-xr-x   15 admin    administ      4096 Feb 11 09:45 ../
-rw-r--r--    1 admin    administ       856 Feb 11 09:45 addon.json
-rw-r--r--    1 admin    administ       878 Feb 11 09:45 torrentreactor.net.php
```

Download Station uses domains to register an Add-on. So in the above command, we use torrentreactor.net as the domain name to create a new Add-on and name the PHP class torrentreactor. The <u>ds-Add-on</u> will generate a default <u>Add-on definition</u> file and PHP program entry.

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # cat
addons/torrentreactor.net/addon.json
    {
        "author": "",
        "website": "",
        "name": "torrentreactor.net",
        "addon": "torrentreactor.net.php",
        "class": "torrentreactor",
        "hosts": [
            "torrentreactor.net"
        ],
        "domain": "torrentreactor.net",
        "version": 100,
        "interface": [
            "IRss",
            "ISearch",
            "IVerify",
            "IDownload"
        ],
        "qpkg_dependencies": {
            "DownloadStation": "4.2.0"
        },
        "description": {
            "CZE": "",
            "DAN": "",
            "DUT": "",
            "ENG": "",
            "ESM": "",
            "FIN": "",
            "FRE": "",
            "GER": "",
            "GRK": "",
            "HUN": "",
            "ITA": "",
            "JPN": "",
            "KOR": "",
            "NOR": "",
            "POL": "",
            "POR": "",
            "ROM": "",
            "RUS": "",
            "SCH": "",
            "SPA": "",
            "SWE": "",
            "TCH": "",
```

```
            "THA": "",
            "TUR": ""
        }
    }
```

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # cat addons/vertor.eu/vertor.eu.php
    <?php
    class vertor implements ISite, IRss, ISearch, IVerify, IDownload {
        /*
         * vertor()
         * @param {string} $url
         * @param {string} $username
         * @param {string} $password
         */
        public function __construct($url = null, $username = null, $password =
null) {
        }
        /*
         * ReadRss()
         * @return {array} RssFeed array
         */
        public function ReadRss() {
        }
        /*
         * Search()
         * @param {string} $keyword
         * @param {integer} $limit
         * @param {string} $category
         * @return {array} SearchLink array
         */
        public function Search($keyword, $limit, $category) {
        }
        /*
         * Verify()
         * @return {boolean}
         */
        public function Verify() {
        }
        /*
         * GetDownloadLink()
         * @return {DownloadLink} DownloadLink object
         */
        public function GetDownloadLink() {
        }
    }
    ?>
```

Now, we want this Add-on to parse vertor.eu RSS feeds, search for torrent files and download torrent files, so we need to adjust some properties and give a correct display name and description.

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # cat
addons/torrentreactor.net/addon.json
    {
        "author": "QNAP Systems, Inc.",
        "website": "http://www.qnap.com",
        "name": "TorrentReactor",
        "addon": "torrentreactor.net.php",
        "class": "torrentreactor",
        "hosts": [
            "torrentreactor.net"
        ],
        "domain": "torrentreactor.net",
        "version": 101,
        "interface": [
            "ISearch"
```

```
        ],
        "qpkg_dependencies": {
            "DownloadStation": "4.2.0"
        },
        "description": {
            "ENG": "Torrentreactor is one of the largest torrent indexers on the
Web.",
            "TCH": "Torrentreactor 是一個最大的種子索引站台"
        }
    }
```

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # cat
addons/torrentreactor.net/torrentreactor.net.php
  <?php
  class torrentreactor implements ISite, ISearch {
      /*
       * torrentreactor()
       * @param {string} $url
       * @param {string} $username
       * @param {string} $password
       */
      public function __construct($url = null, $username = null, $password = null)
{
      }
      /*
       * Search()
       * @param {string} $keyword
       * @param {integer} $limit
       * @param {string} $category
       * @return {array} SearchLink array
       */
      public function Search($keyword, $limit, $category) {
      }
  }
  ?>
```

We only need to implement ISearch for TorrentReactor, so we remove other values in the above example. And then we can code the torrentreactor.net support.

5.2.0 Programming

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # cat
addons/torrentreactor.net/torrentreactor.net.php
<?php
class torrentreactor implements ISite, ISearch {
      const SITE = "http://www.torrentreactor.net";
      private $url;
      public function __construct($url = null, $username = null, $password =
null) {
            $this->url = $url;
      }
      static function UnitSize($unit) {
          switch ($unit) {
          case "KB": return 1000;
          case "MB": return 1000000;
          case "GB": return 1000000000;
          case "TB": return 1000000000000;
          default: return 1;
          }
      }
      public function Search($keyword, $limit, $category) {
          $page = 0;
          $ajax = new Ajax();
          $found = array();
          $success = function ($_, $_, $_, $body, $_) use(&$page, &$found,
&$limit) {
```

```php
                preg_match(
                    "`<table class=\"col-sm-12\">.*</table>`siU",
                    $body,
                    $body
                );
                if (!$body) {
                    return ($page = false);
                }
                $body = html_entity_decode($body[0], ENT_QUOTES, "UTF-8");
                preg_match_all(
                    "`".
                    "<td class=\"date\">(?P.*)</td>.*".
                    "<a.*href=\"(?P<link>/torrents/.*)\">(?P<name>.*)</a>.*".
                    "<td
class=\"buttons\">.*href=\".*url=(?P<enclosure_url>http.*)\".*</td>.*".
                    "<td class=\"size\">(?P<size>.*)[ | ](?P<unit>.*)</td>.*".
                    "<td class=\"seeders\">(?P<seeds>\d+)</td>.*".
                    "<td class=\"leechers\">(?P<leechers>\d+)</td>.*".
                    "<td class=\"category\">(?P<category>.*)</td>.*".
                    "<td class=\"health\">.*</td>".
                    "`siU",
                    $body,
                    $result
                );
                if (!$result || ($len = sizeof($result["name"])) == 0) {
                    return ($page = false);
                }
                for ($i = 0 ; $i < $len ; ++$i) {
                    $tlink = new SearchLink;
                    $tlink->src             = "torrentreactor.net";
                    $tlink->link            = torrentreactor::SITE .
$result["link"][$i];
                    $tlink->name            = strip_tags($result["name"][$i]);
                    $tlink->size            = ($result["size"][$i] + 0) *
torrentreactor::UnitSize($result["unit"][$i]);
                    $tlink->time            = DateTime::createFromFormat("H:i",
$result["time"][$i]);
                    if (!$tlink->time) {
                        $tlink->time        = DateTime::createFromFormat("M d",
$result["time"][$i]);
                    }
                    $tlink->seeds           = $result["seeds"][$i] + 0;
                    $tlink->peers           = $result["leechers"][$i] + 0;
                    $tlink->category        = strtolower($result["category"][$i]);
                    $tlink->enclosure_url   =
urldecode($result["enclosure_url"][$i]);
                    $found []= $tlink;
                    if (count($found) >= $limit) {
                        return ($page = false);
                    }
                }
                ++$page;
            };
        while ($page !== false && count($found) < $limit) {
            $request = array(
                "url"       => "http://www.torrentreactor.net/torrent-
search/$keyword/" . $page * 35,
                "body"      => true,
                "params"    => array(
                    "ajax"  => "torrent-list"
                )
            );
            if (!$ajax->request($request, $success)) {
                break;
            }
        }
```

```
            return $found;
        }
    }
 ?>
```

Whatever kind of Add-on, ISite is the basic interface invoked by Download Station. We also implement ISearch interface in above code. The ISite interface only defines a class constructor method. Every time Download Station invokes an Add-on will give the URL. If the Add-on supports IVerify and the user has set his username and password, Download Station will pass through the username and password. In the above torrentreactor.net.php sample code we make a private variable $url to save the URL value inside the torrentreactor object.

```php
private $url;
public function __construct($url = null, $username = null, $password = null) {
    $this->url = $url;
}
```

Website response data is very important for Download Station. A Search($keyword, $limit, $category) method should be implemented in the ISearch interface. In Search(), developers must format data and combine them into a SearchLink array. After Download Station successfully verifies this SearchLink array, it will transfer the array to JSON format and respond to the front end.

```php
static function UnitSize($unit) {
    switch ($unit) {
    case "KB": return 1000;
    case "MB": return 1000000;
    case "GB": return 1000000000;
    case "TB": return 1000000000000;
    default: return 1;
    }
}
public function Search($keyword, $limit, $category) {
    $page = 0;
    $ajax = new Ajax();
    $found = array();
    $success = function ($_, $_, $_, $body, $_) use(&$page, &$found, &$limit) {
        preg_match(
            "`<table class=\"col-sm-12\">.*</table>`siU",
            $body,
            $body
        );
        if (!$body) {
            return ($page = false);
        }
        $body = html_entity_decode($body[0], ENT_QUOTES, "UTF-8");
        preg_match_all(
            "`".
            "<td class=\"date\">(?P<time>.*)</td>.*".
            "<a.*href=\"(?P<link>/torrents/.*)\">(?P<name>.*)</a>.*".
            "<td
class=\"buttons\">.*href=\".*url=(?P<enclosure_url>http.*)\".*</td>.*".
            "<td class=\"size\">(?P<size>.*)[ | ](?P<unit>.*)</td>.*".
            "<td class=\"seeders\">(?P<seeds>\d+)</td>.*".
            "<td class=\"leechers\">(?P<leechers>\d+)</td>.*".
            "<td class=\"category\">(?P<category>.*)</td>.*".
            "<td class=\"health\">.*</td>".
            "`siU",
            $body,
            $result
        );
        if (!$result || ($len = sizeof($result["name"])) == 0) {
            return ($page = false);
        }
    }
```

```
        for ($i = 0 ; $i < $len ; ++$i) {
            $tlink = new SearchLink;
            $tlink->src            = "torrentreactor.net";
            $tlink->link           = torrentreactor::SITE . $result["link"][$i];
            $tlink->name           = strip_tags($result["name"][$i]);
            $tlink->size           = ($result["size"][$i] + 0) *
torrentreactor::UnitSize($result["unit"][$i]);
            $tlink->time           = DateTime::createFromFormat("H:i",
$result["time"][$i]);
            if (!$tlink->time) {
                $tlink->time       = DateTime::createFromFormat("M d",
$result["time"][$i]);
            }
            $tlink->seeds          = $result["seeds"][$i] + 0;
            $tlink->peers          = $result["leechers"][$i] + 0;
            $tlink->category       = strtolower($result["category"][$i]);
            $tlink->enclosure_url  = urldecode($result["enclosure_url"][$i]);
            $found []= $tlink;
            if (count($found) >= $limit) {
                return ($page = false);
            }
        }
        ++$page;
    };
    while ($page !== false && count($found) < $limit) {
        $request = array(
            "url"       => "http://www.torrentreactor.net/torrent-
search/$keyword/" . $page * 35,
            "body"      => true,
            "params"    => array(
                "ajax"  => "torrent-list"
            )
        );
        if (!$ajax->request($request, $success)) {
            break;
        }
    }
    return $found;
}
```

In the Search() method sample code, the Ajax class encapsulates from PHP curl. It will make URL requesting easier. The Ajax section has more details.

Download Station try to invoke ISearch and other implemented methods (IRss, IVerify and IDownload) and verify the return instance format is correct or not. Only passing the Download Station verification makes Download Station use Add-ons correctly.

To test the ISearch implementation via utility can pass following command.

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # ./ds-addon -s "torrentreactor.net"
"7zip" 1
Array
    (
        [0] => SearchLink Object
        (
            [src] => torrentreactor.net
            [link] => http://www.torrentreactor.net/torrents/13815859/7zip-9-22-Beta
            [name] => 7zip 9 22 Beta
            [size] => 2560000
            [time] => 2015/02/11 08:01:00
            [seeds] => 4
            [peers] => 2
            [category] => unsorted
            [enclosure_url] =>
http://dl7.torrentreactor.net/download.php?id=12416893&name=7zip+9+22+Beta&hash=8c6
```

```
94a2f2e031149c2a397300869014375bb40f6&title=7zip 9 22
Beta&hash=8c694a2f2e031149c2a397300869014375bb40f6
        )
    )
```

5.3.0 Release

Download Station will verify Add-on checksum values and signatures during installation. Developers must compress Add-ons to a single file and sign it. An automatic shell ds-addon-pack.sh can make it easy. If have never generated an RSA key. Please follow these steps to make a new one.

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # /usr/bin/openssl genrsa -out
private.pem 1024
Generating RSA private key, 1024 bit long modulus
..................++++++
...........++++++
e is 65537 (0x10001)
```

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # /usr/bin/openssl rsa -in private.pem
-out public.pem -outform PEM -pubout
writing RSA key
```

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # ls -al
drwxr-xr-x    4 admin     administ      4096 Feb 12 12:51 ./
drwxr-xr-x    3 admin     administ      4096 Feb  6 04:00 ../
drwxr-xr-x   10 admin     administ      4096 Feb 12 09:30 addons/
-rwxr-xr-x    1 admin     administ     20400 eb 12 09:28 ds-addon*
-rwxr-xr-x    1 admin     administ      2166 Feb 12 09:28 ds-addon-pack.sh*
-rwxr-xr-x    1 admin     administ    482400 Feb 12 09:28 ds.cgi*
-rwxr-xr-x    1 admin     administ   5321312 Feb 12 09:28 dsd*
-rwxr-xr-x    1 admin     administ    120832 Feb 12 09:28 index.cgi*
-rw-r--r--    1 admin     administ       887 Feb 12 12:51 private.pem
-rw-r--r--    1 admin     administ       272 Feb 12 12:51 public.pem
```

The private.pem and public.pem is your RSA key. And next, use ds-addon-pack.sh and RSA key to compress Add-ons and make a signature.

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # ./ds-addon-pack.sh private.pem
public.pem addons/torrentreactor.net/
/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin/torrentreactor.net.addon SHA1:
334c632ce9a90fa2a2b7133c02703482b441a923
```

```
[/share/CACHEDEV1_DATA/.qpkg/DSv3/usr/sbin] # ls -al
drwxr-xr-x    4 admin     administ      4096 Feb 12 13:50 ./
drwxr-xr-x    3 admin     administ      4096 Feb  6 04:00 ../
drwxr-xr-x   10 admin     administ      4096 Feb 12 09:30 addons/
-rwxr-xr-x    1 admin     administ     20400 Feb 12 09:28 ds-addon*
-rwxr-xr-x    1 admin     administ      2166 Feb 12 09:28 ds-addon-pack.sh*
-rwxr-xr-x    1 admin     administ    482400 Feb 12 09:28 ds.cgi*
-rwxr-xr-x    1 admin     administ   5321312 Feb 12 09:28 dsd*
-rwxr-xr-x    1 admin     administ    120832 Feb 12 09:28 index.cgi*
-rw-r--r--    1 admin     administ       887 Feb 12 12:51 private.pem
-rw-r--r--    1 admin     administ       272 Feb 12 12:51 public.pem
-rw-r--r--    1 admin     administ     10368 Feb 12 13:50 torrentreactor.net.addon
```

ds-addon-pack.sh will generate a signed Add-on file named torrentreactor.net.addon (SHA1 checksum 334c632ce9a90fa2a2b7133c02703482b441a923). Finally, you can publish the torrentreactor.net.addon and use can use the Download Station Add-on controller to install/upgrade this Add-on file.