

CyberLink for MacOSX Programming Guide

Table of Contents

| | |
|----------------------------|---|
| 1Introduction..... | 1 |
| 2Setup..... | 2 |
| 2.1System Requirement..... | 2 |
| 2.2Installer..... | 2 |
| 3Control Point..... | 3 |
| 3.1Class Overview..... | 3 |
| 3.2Initiating..... | 4 |
| 3.3Root Devices..... | 4 |
| 3.4Control..... | 4 |
| 4License..... | 6 |

1 Introduction

UPnP™¹ architecture is based on open networking to enable discovery and control of networked devices and services, such as media servers and players at home.

UPnP™ architecture is based on many standard protocols, such as GENA, SSDP, SOAP, HTTPU and HTTP. Therefore you have to understand and implement these protocols to create your devices of UPnP™.

CyberLink for MacOSX is a development package for UPnP™ developers. The CyberLink controls these protocols automatically, and supports to create your control points quickly.

Please see the following site and documents to know about UPnP™ in more detail.

| Document | URL |
|---|---|
| UPnP™ Forum | http://www.upnp.org/ |
| Universal Plug and Play Device Architecture | http://www.upnp.org/download/UPnPDA10_20000613.htm |
| Universal Plug and Play Vendor's Implementation Guide | http://www.upnp.org/download/UPnP_Vendor_Implementation_Guide_Jan2001.htm |

¹ UPnP™ is a certification mark of the UPnP™ Implementers Corporation.

2 Setup

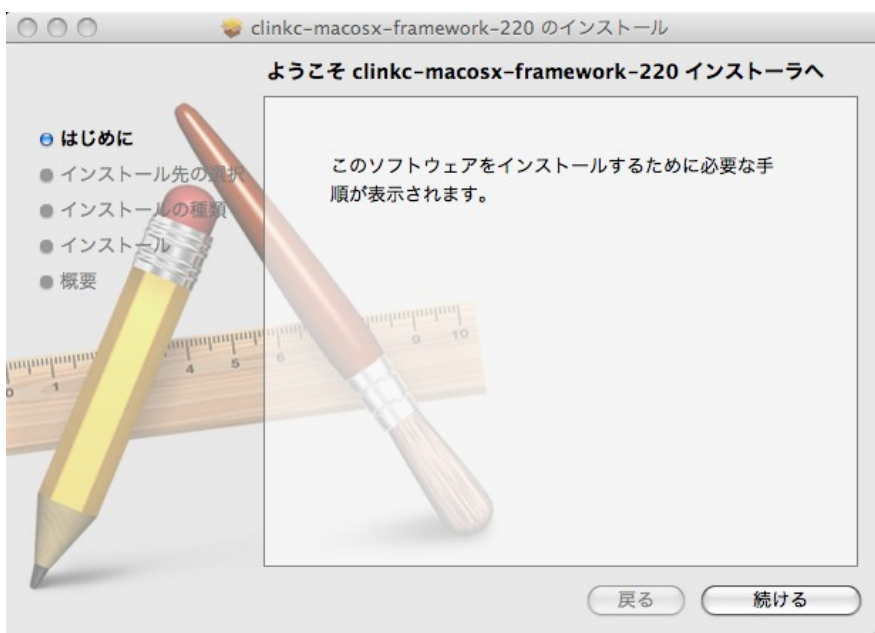
2.1 System Requirement

Currently, the framework is based on Objective-C 2.0. Thus, the current framework requires MacOSX v10.5, Leopard, later.

In the future, I will support other lower MacOSX and iPhone v2.0.

2.2 Installer

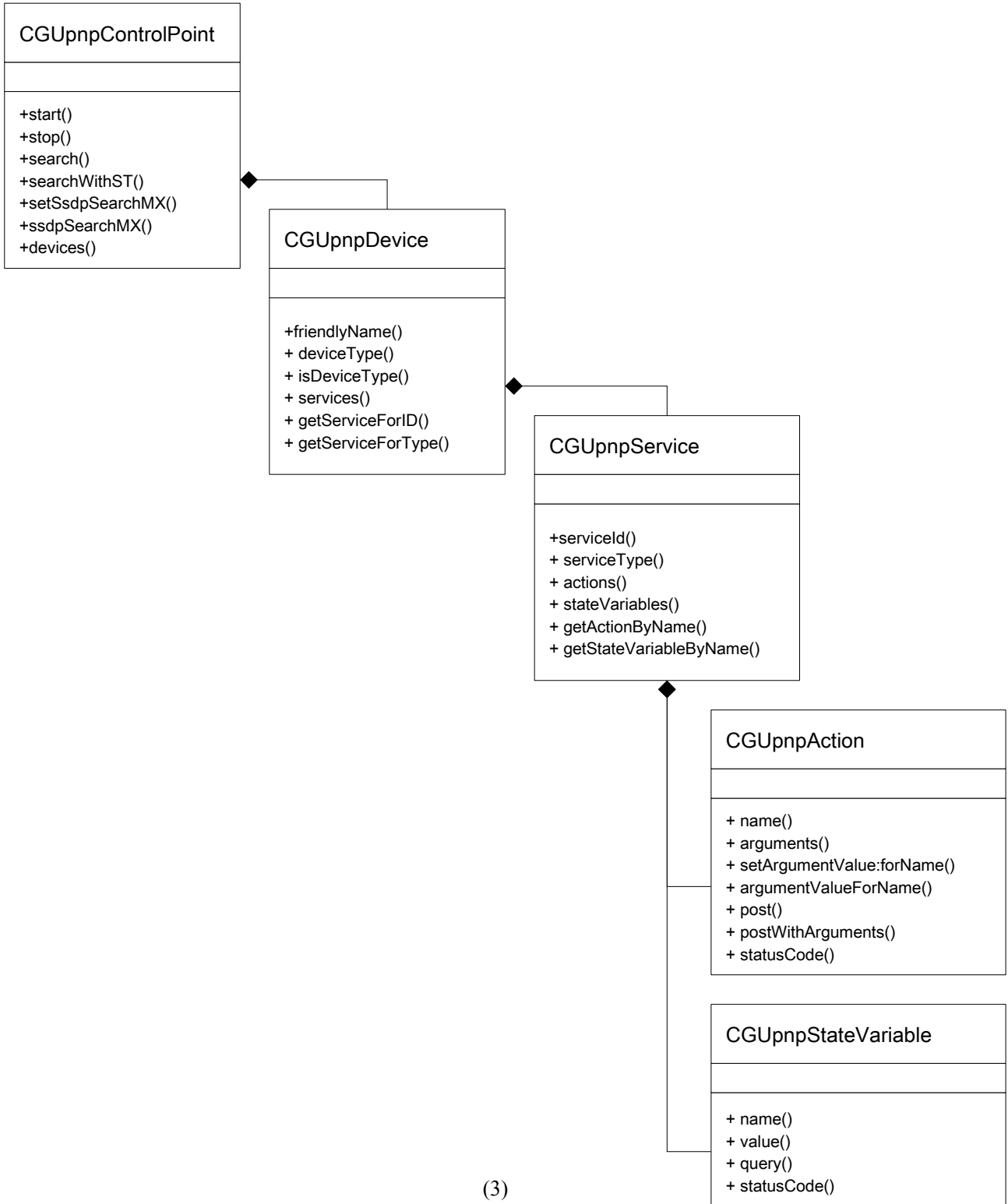
The framework is distributed as a install package as the following. Using the installer, the framework is installed into '/Library/Framework/CyberLink.framework' as default.



3 Control Point

3.1 Class Overview

The following static structure diagram is related classes of CyberLink to create your control point of UPnP™. The control point has some root devices in the UPnP™ network.



3.2 Initiating

To create a UPnP™ control point, create an instance of `CGUpnpControlPoint` class. The new instance is activated automatically using `CGUpnpControlPoint::start`. Use `CGUpnpControlPoint::search` or `searchWithST` to find the devices in the local network.

```
#import <CyberLink/UPnP.h>

.....

CGUpnpControlPoint *ctrlPoint = [[CGUpnpControlPoint alloc] init];

.....

[ctrlPoint search];
```

3.3 Root Devices

Use `CGUpnpControlPoint:devices` to get the all root devices which the control point found. The method returns a `NSArray` object which has the devices as instances of `CGUpnpDevice`.

```
#import <CyberLink/UPnP.h>

.....

CGUpnpControlPoint *ctrlPoint = [[CGUpnpControlPoint alloc] init];

.....

[ctrlPoint search];

NSArray *devArray = [ctrlPoint devices];

for (CGUpnpDevice *dev in devArray)

    NSLog(@"%@ ", [dev friendlyName]);
```

3.4 Control

The control point can send action or query control messages to the discovered devices. To send the action control message, use `CGUpnpAction:setArgumentValue:forName` and `CGUpnpAction:post`. You should set the action values to the all input arguments, and the output argument values is ignored if you set. The following sample posts a action control request that sets a new time, and output the response result.

```
CGUpnpDevice *clockDev = ...

CGUpnpService *timeService = [clockDev getServiceForType:@"urn:schemas-upnp-org:service:xxxx:1"];

CGUpnpAction *setTimeAct = [timeService getActionForName:@"SetTime"];

NSString *currTime = ....

[ setTimeAct setArgumentValue: currTime forName:@"NewTime"];

if ([setTimeAct post]) {

    NSArray *argArray = [ setTimeAct arguments];

    for (CGUpnpArgument *arg in argArray)

        NSLog(@"%@ = %@", [arg name], [arg value]);
```

```
}
```

Similarly, to send the query control message, use `CGUpnpStateVariable::query`. The following sample posts a query control request, and output the return value.

```
CGUpnpDevice *clockDev = ....  
CGUpnpService *timeService = [clockDev getServiceForType:@"urn:schemas-upnp-org:service:xxxx:1"];  
CGUpnpStateVariable *timeStateVar = [timeService "time"];  
if ([timeStateVar query])  
    NSLog(@"%@ = %@", [timeStateVar name], [timeStateVar value]);
```

4 License

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