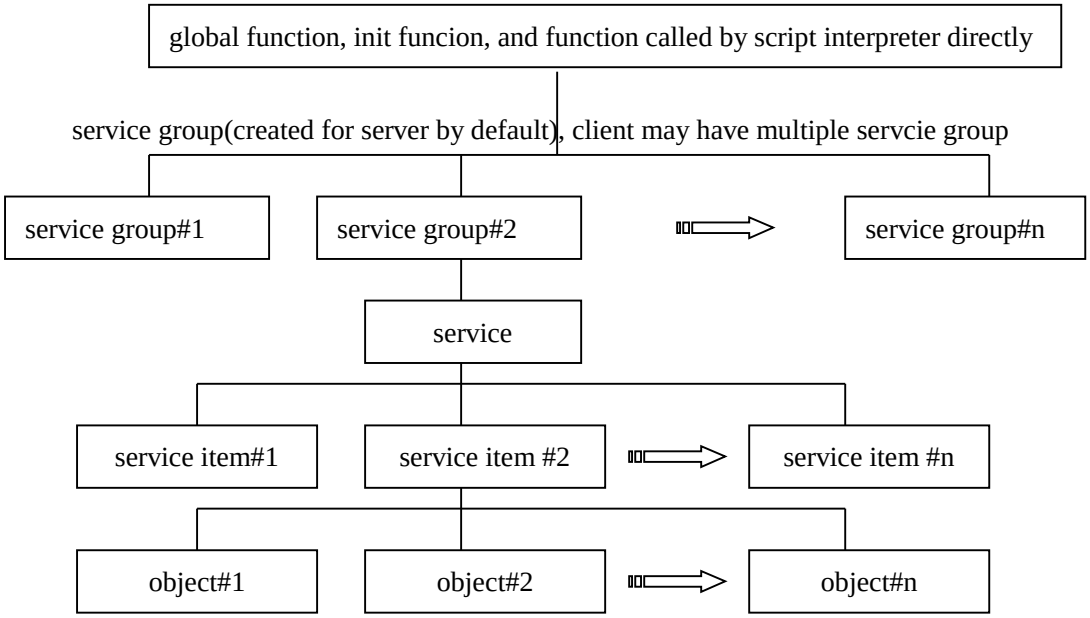
Common Language Extension Interface for script V3.5.0

Contents

1 Introduction

1.1 Hierarchy of objects and functions



1.2 Syntax of different script languages

Different script may have different syntax. The document defines attributes and functons of objects. But how to write applications depends on specific script language. As example:

for lua:
obj = Service:_New()
obj.p1 = 123

for python:
obj = Service._New()
obj.p1 = 123

for ruby:
obj = Service._New()
obj.p1 = 123

In static languages such as java or c#, application uses _Get and _set functions to access object attributes:

```
_GetInt(String Name);
_GetBool(String Name);
```

```
    _GetDouble(String Name);
    _GetStr(String Name);
    Object _Get(String Name);

    _Set(String Name,Object Para);
```

Examples in the document mostly use python language.

Notes of callback functions are used in applications:
For lua/python: callback directly uses script function object
For JAVA/c#: callback function defined in extending class, and uses function's name

For ruby, the callback function is method or proc. It can also be set to nil and then use block, for example,
_MsgLoop (nil) | true |

1.3 Public variable type

For C++, lua, python, java, c#, the following types are common, and may be transfered between different languages.
Simple types:

bool type(bool).
integer type(integer)
float type(double)
string type(string)

tuple type(lua table[index start from 1],Python Tuple, ruby array, array,java Object[],c# Object[]).

Tuple only supports one-dimensional. If there are tuples included in tuple, the map may be incorrect.

Mapping table:

from \ to	lua table	python tuple	ruby array	java Object[]	c# Object[]	Object Property	C/C++ ParaPkg Tuple
lua table		O	O	O	O	O	O
python tuple	O		O	O	O	O	O
ruby array	O	O		O	O	O	O
java Object[]	O	O	O		O	O	O
c# Object[]	O	O	O	O			O
Object Property	Struct table	Struct object	Struct class				

C++ ParaPkg Tuple	O	O	O	O	O		

Agreement for return type:
Single return value uses simple type.
For multiple return value:
Lua: return multiple value directly
Python: return tuple
ruby: return array
Java: return Object[]
C#: return object[]

If attribute is struct defined by C/C++, then use array or tuple to set its value, and struct class object for get its value.

1.4 Gloal object

For each language, there are predefined global variables. By them, you can create other objects, or get predefined constants.

lua:
require "libstarcore"
libstarcore is global variable;

python:
import libstarpy
libstarpy is global variable;

ruby:
```
if (defined? Libstar_ruby) == nil
    require "D:\\Work\\starcore\\core\\starcore.ruby\\libruby193\\libstar_ruby.so"
#     require "libstar_ruby"
end
```

$starruby.XXXX
$starruby is global variable;

java: StarCoreFactory is single instance class.
StarCoreFactory starcore= StarCoreFactory.GetFactory();
starcore is global variable;

c#: StarCoreFactory is single instance class.
StarCoreFactory starcore= StarCoreFactory.GetFactory();

starcore is global variable;.

1.5 Notes for java/c#

Java/c# is static languages, which should define classes before compile, and then create instances of the classes.
Among objects defined in StarCore, besides the following three simple types:
StarTimeClass
StarRectClass
StarFontClass
Attributes of instance of other class can be accessed by _Get. Input parameter is attribute name, and the returned value is Object type. For convenient, cle also provides _GetInt,GetBool,GetDouble,_GetStr to return corresponding type of object, and provides _Getint,_Getbool,Getdouble function to return the value of simple type, and provides _Toint,_Tobool,_Todouble function to change object to simple type conveniently.
Using _Set function to set attribute value: _Set(attribute name, value)

Pre-defined class in starcore:
StarBinBufClass
StarCommInterfaceClass
StarCoreFactory
StarFunctionParaClass
StarObjectClass
StarParaPkgClass
StarQueryRecordClass
StarServiceClass
StarServiceItemClass
StarSrvGroupClass
StarStructClass
StarSXmlClass

StarCoreFactory is class factory. Instance of other class should be created by using it's interface function other than new method. StarCoreFactory is single instance class, which can be obtained by static function GetFacroty, for example:

```
StarCoreFactory starcore= StarCoreFactory.GetFactory();
StarSrvGroupClass SrvGroup = starcore._GetSrvGroup(0);
```

For StarServiceItemClass's function _ClientToSync, StarCommInterfaceClass's function _MsgProc and _WebServerProc,object's system event functions, object's event process functions, _OnNameValueChange, and _OnChange, you can define extending class to overwrite these functions. For example, StarCommInterfaceClass defines function _MsgProc, if you want to overwrite it, you should do as follow:

```
class WebServer_CommInterface extends StarCommInterfaceClass{
```

```
    public void _MsgProc(int uMes,Object[] Msg){
        …
    }
    public WebServer_CommInterface(StarCommInterfaceClass srcobj){
        super(srcobj);
    }
}
```

Using the following format to create instance :

WebServer_CommInterface CommInterface = new WebServer_CommInterface (SrvGroup._NewCommInterface());

Another method:

```
StarCommInterfaceClass CommInterface = SrvGroup._NewCommInterface();
CommInterface = CommInterface._Assign( new StarCommInterfaceClass (){
    public void _MsgProc(int uMes,Object[] Msg){
        …
    }
)
```

CLE will find the defined functions by reflect mechanism.

For StarObjectClass, besides callback function listed above, you can define functions, which may be called by other languages, or attributes, which can be access by other languages.

These function and attributes should be declared with public. For attributes, their type should be boolean, int, double, String.

For function's parameter and return value type supported may be double, bool, integer, string, StarParaPkgClass, StarBinBufClass and StarObjectClass, and the first parameter must be StarObjectClass. When being called, the first parameter is self object attached by CLE. For example:

```
class MyObjectClass extends StarObjectClass{
    public int GetNumber( StarObjectClass self,int para )
    {
      System.out.println("Remote Call Number "+para);
      return para + 1;
    }
    public MyObjectClass(StarObjectClass srcobj){
        super(srcobj);
    }
}

StarObjectClass Obj = Service._New();
Obj = Obj._Assign(new StarObjectClass(){
    public int GetNumber( StarObjectClass self,int para )
```

```
    {
        System.out.println("Remote Call Number "+para);
        return para + 1;
    }
 }
)
```

1.6 Notes for c# .net

For .net4.0, or above, the interface name is “csharp4” or “csharp45” or “csharp451”, and the assembly name is “Star_csharp4” or “Star_csharp45” or “Star_csharp451”. From this version, cle supports dynamic keyword.

StarBinBufClass
StarCommInterfaceClass
StarCoreFactory
StarFunctionParaClass
StarObjectClass
StarParaPkgClass
StarQueryRecordClass
StarServiceClass
StarServiceItemClass
StarSrvGroupClass
StarStructClass
StarSXmlClass

The above classes override TryGetMember/TrySetMember methods.
StarObjectClass and StarParaPkgClass override TrySetIndex/TryGetIndex methods.
StarObjectClass override `TryInvoke/ TryInvokeMember methods`

for example:

Service._ID equals to Service._Get(“_ID”);
ParaPkg[1] equals to ParaPkg._Get(1)

```
dynamic obj = Service._ImportRawContext("lua", "", false, "");
//--call lua function tt, the return contains two integer, which will be packed into parapkg
---*/
dynamic ParaPkg = obj.tt("hello ", "world");
Console.WriteLine("ret from lua : " + ParaPkg._Number+"    "+ParaPkg[0] + "   " + ParaPkg[0]);
```

1.7 Notes for callback function

For lua or python, callback is lua or python function.

For other scripts, such as java, c#, callback is name of the function.
For ruby, the callback function is method or proc. It can also be set to nil and then use block, for example,
_MsgLoop (nil) | true |

2 Constant definition

Constant can be accessed through global object and service object

2.1 Sync status

SYNC_NOT
SYNC
SYNC_IN

2.2 Alarm value

FAULT_IND
FAULT_WARN
FAULT_NORMAL
FAULT_CRITICAL
FAULT_SYSTEM

2.3 Object alloc type

ALLOC_STATIC
ALLOC_GLOBAL
ALLOC_CLIENT
ALLOC_LOCAL

2.4 Object save type

SAVE_SAVE
SAVE_LOCAL
SAVE_GLOBAL
SAVE_NONE

2.5 Object active command

ACTIVE_ALONE
ACTIVE_FOLLOW
ACTIVE_ACTIVE
ACTIVE_DEACTIVE

2.6 Remotecall result

RCALL_OK
RCALL_COMMERROR
RCALL_OBJNOTEXIST
RCALL_FUNCNOTEXIST
RCALL_PARAERROR
RCALL_SYSERROR
RCALL_INVALIDUSR
RCALL_OVERTIME
RCALL_UNKNOWN

2.7 Remotecall source type

RCALLSRC_C
RCALLSRC_SCRIPT
RCALLSRC_WEBSERVICE

2.8 Attribute type

TYPE_BOOL
TYPE_INT8
TYPE_UINT8
TYPE_INT16
TYPE_UINT16
TYPE_INT32
TYPE_UINT32
TYPE_FLOAT
TYPE_LONG
TYPE_ULONG
TYPE_LONGHEX
TYPE_ULONGHEX
TYPE_VSTRING
TYPE_PTR
TYPE_MEMORY
TYPE_STRUCT
TYPE_COLOR
TYPE_RECT
TYPE_FONT
TYPE_TIME
TYPE_CHAR
TYPE_UUID
TYPE_STATICID

TYPE_CHARPTR
TYPE_PARAPKGPTR
TYPE_BINBUFPTR

TYPE_INT8PTR
TYPE_UINT8PTR
TYPE_INT16PTR
TYPE_UINT16PTR
TYPE_INT32PTR
TYPE_UINT32PTR
TYPE_FLOATPTR
TYPE_ULONGPTR
TYPE_LONGPTR
TYPE_STRUCTPTR
TYPE_COLORPTR
TYPE_RECTPTR
TYPE_FONTPTR
TYPE_TIMEPTR
TYPE_UUIDPTR
TYPE_VOID

TYPE_OBJPTR
TYPE_TABLE

TYPE_INT64
TYPE_DOUBLE
TYPE_INT64PTR
TYPE_DOUBLEPTR

TYPE_UWORD
TYPE_UWORDPTR

2.9 UUID

INVALID_UUID

2.10 Virtual key code[win32]

Refer to function "_GetKeyState".

2.11 Program run type

VS_SERVER
VS_CLIENT

VS_DEBUG
VS_TOOLS
VS_SERVER_SERVER
VS_SERVER_USER
VS_CLIENT_USER
VS_CLIENT_COOPERATOR
VS_CLIENT_CALLER

2.12 Module type

VSMODULE_SERVER_SERVER
VSMODULE_SERVER_USER
VSMODULE_CLIENT_USER
VSMODULE_CLIENT_COOPERATOR
VSMODULE_CLIENT_CALLER
VSMODULE_DEBUG

2.13 OS type

VSOS_WIN32
VSOS_LINUX
VSOS_ANDROID
VSOS_ANDROIDV7A
VSOS_ANDROIDX86
VSOS_IOS
VSOS_WP
VSOS_WINRT
VSOS_MACOS
VSOS_WIN10

2.14 System object

System object is only one, should not create it's instances.
System object can be get by **ServiceGroup._SysObject**. It defines the following events:
OnWndAdjust, OnWndResize, OnWndCanBeResize, OnEditSelect, OnSetFocus, OnWinMsg
Whether to create these events depends on application.

```
def SrvGroup_SysObject_OnWndCanBeResize(self, Event ) :
   print(Event)
   return True,1 // return 1 means forbid to change manager window size, and 0 means allow.
SrvGroup._SysObject.OnWndCanBeResize = SrvGroup_SysObject_OnWndCanBeResize
```

3 Struct definition

3.1 COLOR

Decimal number.

3.2 RECT

python: { 'Value':((INT)Left,(INT)Top,(INT)Right,(INT)Bottom), 'Type':'Rect'}
lua : { Value = { (INT)Left,(INT)Top,(INT)Right,(INT)Bottom }, Type = "Rect"}
ruby: { :Value => ((INT)Left,(INT)Top,(INT)Right,(INT)Bottom), :Type => 'Rect'}

```
java:
public class StarRectClass{
	int left;
	int top;
	int right;
	int bottom;
};

c#:
 public ref struct StarRectClass{
	Int32 left;
	Int32 top;
	Int32 right;
	Int32 bottom;
 };
```

3.3 FONT

python: {'Value':((INT)Height,(INT)Size,(BYTE)CharSet,(BYTE)Style,(String)Name), 'Type':'Font'}
lua: {Value = {(INT)Height,(INT)Size,(BYTE)CharSet,(BYTE)Style,(String)Name }, Type = "Font"}
ruby: {:Value => {(INT)Height,(INT)Size,(BYTE)CharSet,(BYTE)Style,(String)Name }, :Type => "Font"}

```
java:
class StarFontClass{
	int Height;
	int Size;
	byte CharSet;
	byte Style;
	String Name;
};

c#:
 public ref struct StarFontClass{
```

```
        Int32 Height;
        Int32 Size;
        byte CharSet;
        byte Style;
        String^ Name;
};
```

Height is negative.
CharSet = 134 is GB2312_CHARSET
Size may be 0, which represents default value.
Style may be 0, or the sum of
LOCALFONT_BOLD : 1
LOCALFONT_ITALIC : 2
LOCALFONT_UNDERLINE : 4
LOCALFONT_STRIKEOUT : 8
.
Name: font name.
For example
1. XX: {‘Value’:(-29,0,134,0,”XX_GB2312”), ‘Type’ : ‘Font’}

3.4 TIME

Python: {‘Value’: (WORD wYear,WORD wMonth,WORD wDay,WORD wHour,WORD wMinute,WORD wSecond,WORD wMilliseconds), ‘Type’:‘Time’ }
lua: {Value = {WORD wYear,WORD wMonth,WORD wDay,WORD wHour,WORD wMinute,WORD wSecond,WORD wMilliseconds} ,Type=“Time” }
ruby: {:Value => (WORD wYear,WORD wMonth,WORD wDay,WORD wHour,WORD wMinute,WORD wSecond,WORD wMilliseconds) , :Type => “Time” }
java:StarTimeClass.

```
class StarTimeClass{
    short wYear;
    short wMonth;
    short wDayOfWeek;
    short wDay;
    short wHour;
    short wMinute;
    short wSecond;
    short wMilliseconds;
};

c#:
 public ref struct StarTimeClass
 {
        unsigned short wYear;
        unsigned short wMonth;
        unsigned short wDayOfWeek;
        unsigned short wDay;
        unsigned short wHour;
        unsigned short wMinute;
        unsigned short wSecond;
        unsigned short wMilliseconds;
```

```
    };
```

3.5 Active set

python: (number, number, number,…)
lua: { number, number, number,…}
ruby: { number, number, number,…}
lua uses table, python uses tuple, JAVA/c# uses Object[].

3.6 SRP version

((BYTE)MainVersion,(BYTE)SubVersion,(SHORT)BuildVersion)
lua uses table,python uses tuple,ruby uses array, JAVA/c# uses Object[].

4 Object system event

Note: if handler has been defined in C++, then script event functions will not be called.
Event:
lua -> table
python -> dict
ruby -> hash
java/c# -> HashTable
note : for windows phone, Dictionary<object,object> should be used

Exmaple:

```
def Object_OnDestroy(self,Event) :
    Print( self, Event )
Return True, 0 #---The first return value is True, means the event has been processed, and followed by return values.
Object._OnDestroy = Object_OnDestroy    #Set object event handler
```

```
function Object:_OnDestroy (Event)
    print( self, Event )
    return true, 0 --- The first return value is true, means the event has been processed, and followed by return values.
end
```

```
public Object[] _OnRemoteSend(Hashtable Ev)
{
    return null;    or
    return new Object[]{true,XX};
}
```

4.1 _OnCreate(self, Event)

```
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self==False instance
//--OUT    none
```

```
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT    none
```

4.2 _OnDestroy(self, Event)

```
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT    none
```

4.3 _OnBeforeDestroy(self, Event)

V3.1.1

```
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT    none
```

4.4 _OnCreateChild(self, Event)

```
//--IN Event['_Arg0'] = ChildObject
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._Arg0 = ChildObject
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT    none
```

4.5 _OnDestroyChild(self, Event)

```
//--IN Event['_Arg0'] = ChildObject
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._Arg0 = ChildObject
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT    none
```

4.6 _OnActivating(self, Event)

```
//--IN Event['_Arg0'] = 0 normal activated 1 re-activated for load
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT    number= 0 success, otherwise fail
```

```
//--IN      Event._Arg0 = 0    normal activated 1 re-activated for load
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT    number= 0 success, otherwise fail
```

The event is triggered only when object is in sync status.

4.7 _OnDeactivating(self, Event)

```
//--IN Event['_Arg0'] = 0 normal deactivated 1 re-deactivated for load
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._Arg0 = 0    normal deactivated 1 re-deactivated for load
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT    none
```

4.8 _OnActivate(self, Event)

```
//--IN Event['_Arg0'] = 0 normal activated 1 re-activated for load
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._Arg0 = 0    normal activated 1 re-activated for load
```

```
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT     none
```

The event is triggered only when object is in sync status.

4.9 _OnDeactivate(self, Event)

```
//--IN Event['_Arg0'] = 0 normal deactivated 1 re-deactivated for load
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._Arg0 = 0    normal deactivated 1 re-deactivated for load
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT     none
```

4.10 _OnActiveChild(self, Event)

```
//--IN Event['_Arg0'] = ChildObject
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._Arg0 = ChildObject
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT     none
```

4.11 _OnDeactiveChild(self, Event)

```
//--IN Event['_Arg0'] = ChildObject
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._Arg0 = ChildObject
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT     none
```

4.12 _OnParentBeforeChange(self, Event)

```
//--IN Event[‘_ Arg0’] = NewParentObject
//--IN Event[‘_DesObject’] =Object
//--IN Event[‘_ThisObject’] =True self ==False instance
//--OUT    number== 0 permit change, otherwise not allow and is the error code.
The event is valid for object is under local control.
```

```
//--IN      Event._ Arg0 = NewParentObject
//--IN      Event._SrcObject = nil
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT    number== 0 permit change, otherwise not allow and is the error code.
The event is valid for object is under local control.
```

4.13 _OnParentChange(self, Event)

```
//--IN Event[‘_DesObject’] =Object
//--IN Event[‘_ThisObject’] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT    none
```

4.14 _OnStaticChange (self, Event)

```
//--IN Event[‘_ Arg0’] = AttributeNamex
//--IN Event[‘_DesObject’] =Object
//--IN Event[‘_ThisObject’] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._ Arg0 = AttributeName
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT    none
```

4.15 _OnScriptChange(self, Event)

```
//--IN Event[‘_ Arg0’] = ScriptName
//--IN Event[‘_ Arg1’] = Operation 0 change 1 create
//--IN Event[‘_DesObject’] =Object
//--IN Event[‘_ThisObject’] =True self ==False instance
//--OUT    none
```

```
//--IN      Event._ Arg0 = ScriptName
```

```
//--IN      Event._ Arg1 = Operation    0 change    1 create
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT     none
```

4.16 _OnSyncGroupChange(self, Event)

```
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT     none
```

```
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT     none
```

4.17 _OnChildSyncGroupChange(self, Event)

```
//--IN Event['_Arg0'] = ChildObject
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT     none
```

```
//--IN      Event._Arg0 = ChildObject
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT     none
```

4.18 _OnActiveSetChange (self, Event)

```
//--IN Event['_Arg0'] = SysRootItem
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT     none
```

```
//--IN      Event._Arg0 = SysRootItem
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT     none
```

4.19 _OnLoadMask (self, Event)

```
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self ==False instance
//--OUT     True,AttributeName1,..      attribute name list which should be not changed by load
```

```
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT     true,AttributeName1,..      attribute name list which should be not changed by load
```

4.20 _OnLoadFinish(self, Event)

```
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self==False instance
//--OUT     none
```

```
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--OUT     none
```

4.21 _OnTicket(self, Event) only triggered to self

```
//--IN Event['_Arg0'] = Ticket
//--IN Event['_DesObject'] =Object
//--OUT     none
```

```
//--IN      Event._Arg0 = Ticket
//--IN      Event._DesObject =Object
//--OUT     none
```

4.22 _OnFrameTicket(self, Event) only triggered to self

```
//--IN Event['_Arg0'] = Ticket
//--IN Event['_Arg1'] = FrameTimer , maintained by server
//--IN Event['_DesObject'] =Object
//--OUT     none
```

```
//--IN      Event._Arg0 = Ticket
//--IN      Event._Arg1 = FrameTimer, maintained by server
//--IN      Event._DesObject = Object
//--OUT     none
```

4.23 _OnIdle(self, Event) : only triggered to self

```
//--IN Event['_Arg0'] = Ticket
//--IN Event['_DesObject'] =Object
//--OUT     number== 0 wait next cycle , otherwise continue create the s=event
```

```
//--IN      Event._Arg0 = Ticket
```

```
//--IN      Event._DesObject = Object
//--OUT     number == 0 wait next cycle , otherwise continue create the s=event
```

The event is dispatched to current active service.

4.24 _OnAppActive(self, Event) only triggered to self

```
//--IN Event['_DesObject'] =Object
//--OUT     none
```

```
//--IN      Event._DesObject = Object
//--OUT     none
```

The event is dispatched to current active service.

4.25 _OnAppDeactive(self, Event) only triggered to self

```
//--IN Event['_DesObject'] =Object
//--OUT     none
```

```
//--IN      Event._DesObject = Object
//--OUT     none
```

The event is dispatched to current active service.

4.26 _OnServiceActive(self, Event) only triggered to self

```
//--IN Event['_DesObject'] =Object
//--OUT     none
```

```
//--IN      Event._DesObject = Object
//--OUT     none
```

The event is dispatched to current active service.

4.27 _OnServiceDeactive(self, Event) only triggered to self

```
//--IN Event['_DesObject'] =Object
//--OUT     none
```

```
//--IN      Event._DesObject = Object
//--OUT     none
```

The event is dispatched to current active service.

4.28 _OnRemoteSend(self, Event)

```
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self==False instance
//--IN Event['_Arg0'] = ParaPkg(message)
//--OUT    none
```

```
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self==false instance
//--IN      Event._Arg0 = ParaPkg(message)
//--OUT    none
```

4.29 _OnCall(Event)

```
//--IN Event['_DesObject'] =Object
//--IN Event['_ThisObject'] =True self==False instance
//--IN      Event['_Arg0'] = FunctionPara
//--IN      Event['_Arg1'] = FunctionName
//--IN      Event['_Arg2'] = FunctionID
//--OUT    True,RetValue
```

```
//--IN      Event._DesObject =Object
//--IN      Event._ThisObject =true self ==false instance
//--IN      Event._Arg0 = FunctionPara
//--IN      Event._Arg1 = FunctionName
//--IN      Event._Arg2 = FunctionID
//--OUT    true,RetValue
```

5 Interface function

5.1 Init CLE

1. **Integer = _InitCore(bool ServerFlag,bool ShowMenuFlag,bool howClientWndFlag,bool SRPPrintFlag,DebugInterface,DebugPort,ClientInterface,ClientPort);**

```
java: int _InitCore(boolean ServerFlag,boolean ShowMenuFlag,boolean ShowOutWndFlag,boolean SRPPrintFlag,String DebugInterface,int DebugPortNumber,String ClientInterface,int ClientPortNumber);
```

ServerFlag True : run as server (default), False : run as client

ShowMenuFlag, whether to show menu

ShowClientWndFlag, Whether to show client window, note: it is reserved, no effect.

SRPPrintFlag, whether to print CLE internal information

DebugInterface, interface for debugserver, may be ""

DebugPort, port number for debugserver.
ClientInterface, interface for client, may be ““.
ClientPort, port number for client

The function returns zero for success,-1for failure, 1for have been inited before.

[Note: parameter ShowMenuFlag, ShowOutWndFlag are reserved. Examples:

```
import libstarpy
libstarpy._InitCore
(ServerFlag,ShowMenuFlag,ShowOutWndFlag,SRPPrintFlag,”“,DebugPort,”“,ClientPort)
```

```
require “libstarcore”
libstarcore._InitCore
(ServerFlag,ShowMenuFlag,ShowOutWndFlag,SRPPrintFlag,”“,DebugPort,”“,ClientPort)
```

]

2. SrvGroup = _InitSimpleEx(ClientPort,WebPort,DependService,…);

```
java: StarSrvGroupClass _InitSimpleEx(int ClientPortNumber,int WebPortNumber,String...DependService);
```

A simplified init method.
Concurrent connections of Webclient is 100, and max upload size is 2MB.
[

```
import libstarpy
SrvGroup= libstarpy._InitSimpleEx(0,0)
```

```
require “libstarcore”
SrvGroup=libstarcore._InitSimpleEx(0,0)
```

]

3. Service = _InitSimple(ServiceName,Pass,ClientPort,WebPort,DependService,…);
Service=_InitSimple1(ServiceName,ServiceID,Pass,ClientPort,WebPort,DependService,…);

```
java: StarServiceClass _InitSimple(String ServiceName,String ServicePass,int ClientPortNumber,int WebPortNumber,String...DependService);
java: StarServiceClass _InitSimple1(String ServiceName,String ServiceID,String ServicePass,int ClientPortNumber,int WebPortNumber,String...DependService);
```

A simplified init method. “Pass” is the password of root user.
Concurrent connections of Webclient is 100, and max upload size is 2MB.
[

```
import libstarpy
Service= libstarpy._InitSimple(“test”,”123”,0,0)
```

```
require “libstarcore”
Service=libstarcore._InitSimple(“test”,”123”,0,0)
```

]

5.2 Callback and control functions

These functions should be called in thread which inits the CLE. If is called in other threads, apps should acquire lock using function _SRPLock first, and release lock using function _SRPUnLock after finished.

0. **_ModuleExit** () : exit function

```
java: void _ModuleExit();
```

Before exit the progam, the function should be called to clear resources occupied by CLE.

Note:
For android, beacuse the jni module libstar_java.so is not unloaded by jvm.
Please don't call _ModuleExit, and using the following to check the service has been created before.

```
StarSrvGroupClass SrvGroup = starcore._GetSrvGroup(0);
StarServiceClass Service = SrvGroup._GetService("test","123");
if( Service == null ){    // the service has not been initialized
}else{
}
```

you can call the following function to exit the process.

```
android.os.Process.killProcess(android.os.Process.myPid());
```

1. **_ModuleClear** ()

```
java: void _ModuleClear();
```

The function deletes all CLE objects. After the function is called, application can re-init service or load new service.

2. **_RegMsgCallBack** (CallBack):

```
java: void _RegMsgCallBack(StarCallBackClass Obj,String CallBackName);
```

Register callback function to handle global event from CLE.
For static script language, such as c#, java, the prototype of the function is **_RegMsgCallBack** (StarCallBackClass Obj,CallBack function name)

```
def CallBack( ServiceGroupID, uMes, wParam, lParam ) :
  …
return True/False,arg1,…        The first argument is True, means the following args is valid.
```

```
function CallBack( ServiceGroupID, uMes, wParam, lParam )
…
return true/false, arg11,…        The first argument is true, means the following args is valid.
libstarcore._RegMsgCallBack( CallBack )
```

```
java/c#:  should extending StarCallBackClass, defining callback function, and registering with callback function name.
Object[] CallBack( (int)ServiceGroupID, (int)uMes, Object, Object )
…
return new Object[] {true/false, arg11,…}        The first argument is true, means the following args is valid.
```

example:

```
class MyStarCallBackClass extends StarCallBackClass{
        public Object[] CallBack( int ServiceGroupID, int uMes, Object wParam, Object lParam )
        {
                return null;
        }
        MyStarCallBackClass(StarCoreFactory
starcore){super(starcore);starcore._RegMsgCallBack(this,"CallBack");}
}

        StarCoreFactory starcore= StarCoreFactory.GetFactory();
        MyStarCallBackClass CallBack = new MyStarCallBackClass(starcore);
```

3. **_RegMsgCallBack_P** (CallBack):

for lua, ruby, python, this function is same as __RegMsgCallBack

for python, support decorator.

java: void _RegMsgCallBack_P(StarMsgCallBackInterface CallBackProc);

```
public interface StarMsgCallBackInterface{
      public Object Invoke( int ServiceGroupID, int uMes, Object wParam, Object lParam);
}
```

Example:

```
        starcore._RegMsgCallBack_P(new StarMsgCallBackInterface(){
                public Object Invoke( int ServiceGroupID, int uMes, Object wParam, Object lParam)
                {
                        if( uMes == starcore._Getint("MSG_ONTELNETSTRING_PREEXECUTE") ){
                        }
                return null;
                }
        });
```

c#: `void _RegMsgCallBack_P(StarMsgCallBackInterface^ CallBackProc);`

public delegate Object StarMsgCallBackInterface(int ServiceGroupID, int uMes, Object wParam, Object lParam)

Example:

```
        starcore._RegMsgCallBack_P(delegate (int ServiceGroupID, int uMes, Object wParam, Object
lParam){
                if( uMes == starcore._Getint("MSG_ONTELNETSTRING_PREEXECUTE") ){
                }
                return null;
        });
```

Lua:

```
libstarcore._RegMsgCallBack_P( function ( ServiceGroupID, uMes, wParam, lParam )
   if( uMes == libstarcore.MSG_ONINTERFACE_ACTIVATE ) then
         print(ServiceGroupID, uMes, wParam, lParam )
   end
end
)

Python:

def CallBack( ServiceGroupID, uMes, wParam, lParam ) :
   if( uMes == libstarpy.MSG_ONINTERFACE_ACTIVATE ) :
         print(ServiceGroupID, uMes, wParam, lParam )

libstarpy._RegMsgCallBack_P(CallBack)
```

uMes :
MSG_VSDISPMSG :
MSG_VSDISPLUAMSG :
MSG_DISPMSG :
MSG_DISPLUAMSG: displaying information, wParam is content string, lParam is warining level.
Return value will be ignored.

MSG_MESSAGEBOX : displaying messagebox, wParam is the caption, lParam is content
Return value will be ignored.

MSG_EXIT : request to exit program, wParam is ErrorInfo,lParam is invalid,
Return value will be ignored.

MSG_GETWNDHANDLE : get client window handle,wParam is invalid,lParam is invalid,
Return value:True,handle(uint)

MSG_SETWNDSIZE : set client window size,wParam is width,lParam is height,
Return value will be ignored.
MSG_GETWNDSIZE : get client window size,wParam is invalid,lParam is invalid,
return value:True,width(uint) ,height(uint)

MSG_CLEARWND :clear client window,wParam is invalid,lParam is invalid,
Return value will be ignored.
MSG_HIDEWND :hide client window,wParam is invalid,lParam is invalid,
Return value will be ignored.
MSG_SHOWWND :display client window,wParam is invalid,lParam is invalid,
Return value will be ignored.
MSG_SETWNDBK:set client window background color,wParam is color,lParam is invalid,
Return value will be ignored.
MSG_SETFOCUS: set client window focus, wParam is window handle, lParam 0/1, which 0 represents notification, and 1 means the message should be processed.
Return value will be ignored.

MSG_ISAPPACTIVE : whether the program is active or not,wParam is invalid,lParam is invalid,
return value:True,True/False.
MSG_SETIDLEACTIVE :wParam is True/False,lParam is invalid.
Return value will be ignored.

MSG_SETINFOCOLOR :set text color,wParam is (NormalTextColor, ExplaneColor, ObjectNameColor, AttributeTypeColor, NumberColor, ErrorColor),lParam is invalid,
For java/c#, wPara is int array.
Return value will be ignored.

MSG_SETINFOBK: set text background color,wParam is color,lParam is invalid,
Return value will be ignored.

MSG_KILLFOCUS: kill client window focus,wParam is window handle. lParam 0/1 ,0 means notification, and 1 means it should be processed.
Return value will be ignored.

MSG_ONBEFORESTOPSERVICE : before stop service, wParam is string of service id,lParam is invalid,
Return value will be ignored.

MSG_ONSTOPSERVICE: service is stopped, wParam is string of service id, lParam is invalid,
Return value will be ignored.

MSG_ONACTIVESERVICE:service is activated,wParam is string of service id, lParam is invalid,
Return value will be ignored. [note:valid for client service group]

MSG_SAVESERVICE: whether to save service,wParam is invalid,lParam is invalid
return value:True,True/False.[note:valid for server service group]

MSG_HYPERLINK: active hyper connection. wParam is URL,lParam is int which means creating new window or not,
Return value will be ignored.

MSG_APPEVENT: trigger app event, wParam EventID, lParam VS_CHAR *EventInfo
Return value will be ignored.

MSG_SERVERTERM: server close connection,wParam is invalid,lParam is invalid,
Return value will be ignored. [note:only valid for client service group]

Manager window message:

MSG_ISMANAGERVISIBLE :whether manage window is visible. wParam is invalid,lParam is invalid,
return value:True,True/False.

MSG_HIDEMANAGER :hide manager window,wParam is invalid,lParam is invalid,
Return value will be ignored.

MSG_SHOWMANAGER :show manager window,wParam is invalid,lParam is invalid,
Return value will be ignored.

MSG_SETMANAGERCAPTION:set manager window caption,wParam is caption,lParam is invalid,
Return value will be ignored.

MSG_GETMANAGERSIZE :get manager window size,wParam is invalid,lParam is invalid,
return value:True,width(uint) ,height(uint)

MSG_GETMANAGERHANDLE :get manager window handle,wParam is invalid,lParam is invalid,
return value:True,handle(uint)

MSG_SHOWMANAGERSTATUSMENU:whether to show manager window menu or status bar,wParam is menu status True/False,lParam is status of status bar, True/False,
Return value will be ignored.

MSG_SETMANAGERSTYLE :set manager window parameters,wParam is (SystemMenuFlag, MinimizeFlag, MaximizeFlag, ShowBorderFlag, SizeableFlag),lParam is invalid,
for java/c#,wPara is bool array
Return value will be ignored.

MSG_MOVEMANAGER :move window,wParam is (X,Y,nWidth,nHeight),lParam RepaintFlag,
Return value will be ignored.

for java/c#,wPara is int array

MSG_GETMANAGERPOS :ge window position,wParam is invalid,lParam is invalid,
return value:true,X,Y,nWidth,nHeight

MSG_SETMANAGERSTATUS: wParam Status lParam 0 //--0 normal, 1 minimize, other maximize
Return value will be ignored.

MSG_REDIRECTTOURLREQUEST:wParam is Url string, lParam is WorkDirectory string.
Return: false(allow),true(forbid)

MSG_REDIRECTTOURLINFO: wParam is Url string, lParam is ParaPkg. Return value will be ignored

MSG_GETURLREQUEST:wParam is invalid,lParam is invalid. Return value:true,url string

MSG_SETPROGRAMTYPE:wParam Type[VS_SERVER_SERVER/VS_SERVER_USER], lParam 0, return value: false(permit),true(forbid)

MSG_ISWINDOWLESSSITE: wParam 0 lParam 0. Return: false(yes),true(not)

/*------telnet string, add 2.50.0*/

MSG_ONTELNETSTRING /*--wParam *Buf lParam *ScriptInterface, return: true(not run),false(run)*/
/* if lParam is "CTRL", then wParam is key char of CTRL+A...Z, except H/I/J/M */

/*------telnet string pre processing before executed, add 2.52.0*/
MSG_ONTELNETSTRING_PREEXECUTE /*--wParam *Buf lParam *ScriptInterface, return: string [for lua,ruby,python]
Return object[]{true/false,string} [for java or c#, the first bool result is ignored]*/

If return result is null, then the script continue to be executed.
If return result is empty string “”,then the script will not be executed.
You can change script string in the callback and return the changed script to cle.

/*------script interfce activate, add 2.6.5*/
MSG_ONINTERFACE_ACTIVATE /*--wParam *script interface, lparam: 0 return: ignore*/

4. **bool = _SRPDispatch** (bool WaitFalg) : message dispatch function

```
java: boolean _SRPDispatch(boolean WaitFalg);
```

One message will be processed for each call. If return value is True, then there is a message being processed, otherwise the message queue is empty.

5. **_SRPIdle** () : Notify CLE to create IDLE system event.

```
java: boolean _SRPIdle();
```

6. **_MsgLoop** (bool ExitFunc = None / LoopTimes = times) : message loop function.

```
java: boolean _MsgLoop(StarCallBackClass Obj,Object ExitFuncName_LoopTimes );
        public boolean ExitFunc()
        {
            return true/false;
        }
```

For static language, such as c#, java, its prototype is **_MsgLoop** (StarCallBackClass Obj,bool ExitFunc = None / LoopTimes = times) :
It the ExitFunc returns False, then the loop continues, or else the loop breaks.
If Looptimes is not 0, the loop is ended after the corresponding times. Each loop will process all the message in the queue.

7. **_MsgLoop_P** (CallBack):
for lua, ruby, python, this function is same as _MsgLoop
for python, support decorator.

```
java: boolean _MsgLoop_P(StarMsgLoopInterface CallBackProc );

public interface StarMsgLoopInterface{
    public boolean Invoke( );
}
c#: bool _MsgLoop_P(StarMsgLoopInterface CallBackProc );

public delegate bool StarMsgLoopInterface();
```

C++ code:

```
while(1){
        if(PeekMessage(&msg, NULL, 0, 0, PM_NOREMOVE)){
                if(!GetMessage(&msg, NULL, 0, 0))
                        break;
                TranslateMessage(&msg);
                        DispatchMessage(&msg);
        }else{
                    if( SRPDispatch( VS_FALSE ) == VS_FALSE )
                        SRPIdle procedure
            }
       }
```

```
function ExitFunc()
       return true/false;
end
libstarcore._MsgLoop(ExitFunc)
```

```
def ExitFunc()
     return true/false;
libstarpy._MsgLoop(ExitFunc)
```

```
class MyStarCallBackClass extends StarCallBackClass{
          MyStarCallBackClass(StarCoreFactory starcore){super(starcore);}
          public boolean ExitProc()
        {
           if(StarCore._KeyPress() == 27){
                return true;
           }
           return false;
        }
}


          StarCoreFactory starcore= StarCoreFactory.GetFactory();
          MyStarCallBackClass CallBack = new MyStarCallBackClass(starcore);

         starcore._MsgLoop(CallBack,"ExitProc");
```

```
class MyStarCallBackClass : StarCallBackClass{        c#
          public MyStarCallBackClass(StarCoreFactory starcore):base(starcore){}
        public Boolean ExitProc()
        {
           if(StarCore._KeyPress() == 27){
                return true;
           }
           return false;
        }
}

          StarCoreFactory starcore= StarCoreFactory.GetFactory();
          MyStarCallBackClass CallBack = new MyStarCallBackClass(starcore);

          starcore._MsgLoop(CallBack,"ExitProc");
```

8. **bool = _WinMsgDispatch** () : dispatch win32 message

```
java: boolean _WinMsgDispatch();
```

Returns FALSE means WM_QUIT message is detected.

9. **code = _KeyPress** () : return key code, for example: ESC=27

```
java: int _KeyPress();
```

10. **_SRPLock** ()/_SRPUnLock, lock and unlock

```
java: void _SRPLock();
java: void _SRPUnLock();
```

11. _RegDispatchRequest_P()

The CallBack is called in the thread context different from main thread.
It must not call SRPDispatch function to dispatch message.
It should send message to main thread, and return. Then wait main thread to dispatch message

Lua:

```
libstarcore._RegDispatchRequest_P(function() xxxx end)
```

Python:

for python, support decorator.

```
def xxxxx():
    Xxxx
libstarpy._RegDispatchRequest_P(xxxxx)

@libstarpy._RegDispatchRequest_P()
def xxxxx():
   Xxxx
```

Ruby : this function is not supported. For ruby always run in main thread context.

Java:

```
starcore._RegDispatchRequest_P(new StarDispatchRequestCallBackInterface(){
            public void Invoke( )
            {
                System.out.println("DIspatch Request from java");
            }
        });
```

CS:

```
starcore._RegDispatchRequest_P(()=>{
                Console.WriteLine("DIspatch Request from cs");
        });
```

12. _RegServiceClearCallBack_P()

The CallBack is called before the service is to be cleared.

Lua:

```
libstarcore._RegServiceClearCallBack_P(function() xxxx end)
```

Python:

for python, support decorator.

```
def xxxxx():
    Xxxx
libstarpy. _RegServiceClearCallBack_P(xxxxx)
```

```
@libstarpy. _RegServiceClearCallBack_P()
def xxxxx():
    Xxxx
```

Ruby:

```
$starruby._RegServiceClearCallBack_P{ ||
    xxxxx
}
```

Java:

```
starcore. _RegServiceClearCallBack_P(new StarServiceClearCallBackInterface(){
            public void Invoke( )
            {
                System.out.println("Clear Request from java");
            }
        });
```

CS:

```
starcore._RegServiceClearCallBack_P(()=>{
                Console.WriteLine("Clear Request from cs");
        });
```

13. **_ReleaseScriptGIL** ()/**_CaptureScriptGIL**(), release and capture script global lock

```
java: void _ReleaseScriptGIL();
java: void _CaptureScriptGIL();
```

add v3.1.0

if calling SRPUnLock and then waiting for another thread event, the global script lock must be released, especially for python.

the calling sequence:

SRPUnLock -> ReleaseScriptGIL -> Waiting event from other thread -> CaptureScriptGIL -> .... ->SRPLock

5.3 Global function

1. **ServiceGroup = _GetSrvGroup(ServiceGroupID or Service name);**

```
java: StarSrvGroupClass _GetSrvGroup(Object ServiceName_GroupID);
```

Get service group object. For server service group, ServiceGroupID is fixed set to 0, and for client service group, the function must be called after the service group has been created .

2. **ServiceGroup = _CreateSrvGroup (ServiceGroupID,int Type);**

```
java: StarSrvGroupClass _CreateSrvGroup(int ServiceGroupID,int Type );
```

Create service group and return the service group object. Type should be set to VS_CLIENT_USER, which means to create client service group.

If ServiceGroupID==0, the id will be allocated by CLE.

If the service group has existed, None/null will be returned.

_DeleteSrvGroup (ServiceGroupID);

java: void _DeleteSrvGroup(int ServiceGroupID);

Delete service group. Group 0 can not be deleted.

3. **_SrvGroupInfo ();**

java: void _SrvGroupInfo();

Print current service infomation

4. **ServiceGroupID = _FirstSrvGroup ();**

java: int _FirstSrvGroup();

Return ID of the first service group. Return 0xFFFFFFFF means no more service group.

5. **ServiceGroupID = _NextSrvGroup ();**

java: int _NextSrvGroup();

Return ID of next service group. Return 0xFFFFFFFF means no more service group

5.3.1 OS type and time

1. **Type=_GetOsType();**

java: int _GetOsType();

System type is 0 Win32, 1 Linux.

2. **_Time();**

java: StarTimeClass _Time();

Get current system time.

5.3.2 registry query function

1. **Str = _GetRegStr (SubKey, ValueName,** char *DefaultValue**);**

java: String _GetRegStr(String SubKey,String ValueName,String DefaultValue);

The format of subkey is as “Software\\SRPLab\\SRPServer"

When the SubKey does not exist, DefaultValue will be returned.

2. **Int = _GetRegInt (SubKey, ValueName,** int DefaultValue**);**

java: int _GetRegInt(String SubKey,String ValueName,int DefaultValue);

The format of subkey is as “Software\\SRPLab\\SRPServer"

When the SubKey does not exist, DefaultValue will be returned.

5.3.3 32bit operation

1. **int = _shl32(a,b); a << b**

java: int _shl32(int a,int b);

2. **int = _shr32(a,b); a >> b**

java: int _shr32(int a,int b);

3. **int = _and32(a,b); a & b**

java: int _and32(int a,int b);

4. **int = _or32(a,b); a | b**

java: int _or32(int a,int b);

5. int = _xor32(a,b); a ^ b

java: int _xor32(int a,int b);

5.3.4 file find function

1. Exist,Handle,FileName,IsDir(true/false) = _FindFirstFile (FileName);

java: Object[] _FindFirstFile(String FileName);

2. Exist, FileName,IsDir(true/false)= _FindNextFile (Handle);

java: Object[] _FindNextFile(Object Handle);

3. _FindClose (Handle)

java: void _FindClose(Object Handle);

_FindClose should be called after _FindFirstFlle function.

5.3.5 byte order change

1. _htonl(long)

java: int _htonl(int a);

2. _htons(short)

java: short _htons(short a);

3. _ntohl(long)

java: int _ntohl(int a);

4. _ntohs(short)

java: short _ntohs(short a);

5.3.6 Shell execute command[Windows,do not support C#]

1. _ShellExecute (int hWnd, String ShellOperation, String ShellFile, String Parameters, String Directory, int ShowCmd**)**

java: _ShellExecute(int hWnd, String ShellOperation, String ShellFile, String Parameters, String Directory, int ShowCmd);

C# does not support this function.

5.3.7 virtual key status[Windows,do not support C#]

1. bool = _GetKeyState (Key) :

java: boolean _GetKeyState(int Key);

If the key is pressed, then True will be returned. Key defines as follows:

```
VS_LBUTTON      0x01
VS_RBUTTON      0x02
VS_MBUTTON      0x04

VS_ESCAPE       0x1B
VS_BACKSPACE    0x08
VS_TAB      0x09
VS_ENTER        0x0D
VS_SPACE        0x20

VS_SHIFT        0x10
VS_CTRL         0x11
```

VS_ALT 0x12

VS_LWIN 0x5B
VS_RWIN 0x5C
VS_APPS 0x5D

VS_PAUSE 0x13
VS_CAPSLOCK 0x14
VS_NUMLOCK 0x90
VS_SCROLLLOCK 0x91

VS_PGUP 0x21
VS_PGDN 0x22
VS_HOME 0x24
VS_END 0x23
VS_INSERT 0x2D
VS_DELETE 0x2E

VS_LEFT 0x25
VS_UP 0x26
VS_RIGHT 0x27
VS_DOWN 0x28

VS_0 0x30
VS_1 0x31
VS_2 0x32
VS_3 0x33
VS_4 0x34
VS_5 0x35
VS_6 0x36
VS_7 0x37
VS_8 0x38
VS_9 0x39

VS_A 0x41
VS_B 0x42
VS_C 0x43
VS_D 0x44
VS_E 0x45
VS_F 0x46
VS_G 0x47
VS_H 0x48
VS_I 0x49
VS_J 0x4A
VS_K 0x4B
VS_L 0x4C
VS_M 0x4D
VS_N 0x4E
VS_O 0x4F
VS_P 0x50
VS_Q 0x51
VS_R 0x52
VS_S 0x53
VS_T 0x54
VS_U 0x55
VS_V 0x56
VS_W 0x57
VS_X 0x58
VS_Y 0x59
VS_Z 0x5A

VS_GRAVE 0xC0
VS_MINUS 0xBD
VS_EQUALS 0xBB
VS_BACKSLASH 0xDC
VS_LBRACKET 0xDB
VS_RBRACKET 0xDD
VS_SEMICOLON 0xBA
VS_APOSTROPHE 0xDE

VS_COMMA 0xBC
VS_PERIOD 0xBE
VS_SLASH 0xBF

VS_NUMPAD0 0x60
VS_NUMPAD1 0x61
VS_NUMPAD2 0x62
VS_NUMPAD3 0x63
VS_NUMPAD4 0x64
VS_NUMPAD5 0x65
VS_NUMPAD6 0x66
VS_NUMPAD7 0x67
VS_NUMPAD8 0x68
VS_NUMPAD9 0x69

VS_MULTIPLY 0x6A
VS_DIVIDE 0x6F
VS_ADD 0x6B
VS_SUBTRACT 0x6D
VS_DECIMAL 0x6E

VS_F1 0x70
VS_F2 0x71
VS_F3 0x72
VS_F4 0x73
VS_F5 0x74
VS_F6 0x75
VS_F7 0x76
VS_F8 0x77
VS_F9 0x78
VS_F10 0x79
VS_F11 0x7A
VS_F12 0x7B

5.3.8 intger compare

1. **int = _IntComp(a,b); -1: a<b 0 a==b 1 a>b**
   java: int _IntComp(int a,int b);
1. **int = _UIntComp(a,b); -1: a<b 0 a==b 1 a>b**
   java: int _UIntComp(int a,int b);

5.3.9 get UUID

1. **Uuid=_UuidCreate()**
   java: String _UuidCreate();

5.3.10 get current Url

1. **Url=_GetUrl ()**
   java: String _GetUrl();
   Example: for http://127.0.0.1/test/test.html, the return value is http:\\127.0.0.1\test
2. **Url=_GetRootUrl ()**
   java: String _GetRootUrl();
   Example: for http://127.0.0.1/test/test.html, the return value is http:\\127.0.0.1

5.3.11 set program run type [valid at server]

If type is different from current, current service will be unloaded first.

1. **_SetProgramType (Type) [Reserved]**

   java: void _SetProgramType(int Type);

   Type takes value from: VS_SERVER_SERVER/VS_SERVER_USER

2. **Type= _GetProgramType()**

   java: int _GetProgramType();

5.3.12 find char position

1. **Int=_strchr (string,char)**

   java: int _strchr(String Str,String Ch);

2. **Int=_strrchr(string,char)**

   java: int _strrchr(String Str,String Ch);

For lua, Return index starts from 1, and -1 means not exist.

For other script, Return index starts from 0, and -1 means not exist.

Do not distinguish '/' and '\\'

5.3.13 ID to MD5 string

1. **MD5Str =_IDToMD5 (IDStr)**

   java: String _IDToMD5(String IDStr);

5.3.14 get system path

1. **Path =_GetSysPath()**

   java: String _GetSysPath();

On Windows, the return is X:\windows\system32

On Linux, the return is /usr/lib

5.3.15 set log file

1. **_SetLogFile (FileName,bool LogAll)**

   java: void _SetLogFile(String FileName,boolean LogAll);

If FileName is ““, current log will be canceled.

LogAll:true, log all print information, otherwise only log warning and error information.

5.3.16 authorize

1. **string= _GetSystemRegCode()**

   java: String _GetSystemRegCode();

   Get local serial number

   Note: From Version 2.0，this function should not be used.

2. **bool=_SetRegisterCode(CodeStr,Single)**

   java: boolean _SetRegisterCode(String CodeString,boolean Single);

   Note: From Version 2.0， Single will be ignored.

   The function should be called after starcore init and before creating any service.

   require "libstarcore"

libstarcore._InitCore(true,true,false,true,"",0,"",0); // should init starcore before call _PreAuthorize

libstarcore._SetRegisterCode(XXXX,false);

3. **bool= _IsRegistered ()**

   java: boolean _IsRegistered();

   Whether CLE is registered.

4. **bool _PreAuthorize(string ServiceName,string ServiceID,string CodeStr,bool Single)**

   java: boolean _PreAuthorize(String ServiceName,String ServiceID,String CodeStr,boolean Single);

   Note: From Version 2.0，ServiceName,ServiceID,and Single will be ignored.

   This function is depreciated

5.3.17 set locale of cle

1. **void _SetLocale(String Lang);**

   void _SetLocale(String Lang);

2. **string _GetLocale();**

   String _GetLocale();

for windows:

Lang should be “utf8” or “ansi”,or “.XXX”, XXX is number of codepage, such as “.950”

5.3.18 find window handle[win32]

3. **long hWnd= _FindWindow(String Caption);**

   long _FindWindow(String Caption);

   Find window handle.

5.3.19 get script interface index

4. **int _GetScriptIndex(String Interface);**

   int _GetScriptIndex(String Interface);

5.3.20 get script interface version

5. **int[] _Version();**

   int[] _Version();

   Return interface share library version of caller script;

5.3.21 get or set env

1. **boolean _SetEnv(String Name,String Value)**

   Set enviornment value for current process

2. **String _GetEnv(String Name)**

   Get enviornment value from current process

5.3.22 set script interface module

1. Boolean = _SetScript(String ScriptInterface,String Module, String Para)

Module can be input “”
For java:
Para might be used to set jvm share library and class path, “jvm=XXXX”,” java.class.path=XXX”, ” java. library.path=XXX”, or both, separated by “,”. For example:
_SetScript("java","","jvm=C:\\Program Files\\Java\\jdk1.6.0_21\\jre\\bin\\server\\jvm.dll, java.class.path=.;c:\\srplab\\libs\\starcore.jar")

if java.library.path is set, star_java.dll/libstar_java.so should be in the path.

for python:

-S : (Py_NoSiteFlag)
-d : (Py_DebugFlag)
-s : (Py_NoUserSiteDirectory)
-v : (Py_VerboseFlag)
-i : (Py_InspectFlag)
-B : (Py_DontWriteBytecodeFlag)

For example: “-S –v”

for ruby:
-m/-M: ruby share library name with full path
-v/-V : version of ruby, default is “1.9.3”. **Note: this parameter is only valid on windows desktop**

For example
_SetScript("ruby","D:\\Work\\starcore\\core\\starcore.ruby\\libruby193\\libstar_ruby.so", "-v 1.9.3")

for other languages:

Para will be ignored

5.3.23 Detach Thread

1. public void _DetachCurrentThread();

5.3.24 Set Operation Path

1. public String _SetCoreOperationPath(String Path);

This function returns old operation path.

5.3.25 String Code Conversion

1. **boolean _iconv(String FromLocale,String ToLocale,StarBinBufClass InBuf,StarBinBufClass OutBuf)**

5.3.26 Get Core Share Library Handle

1. **long _CoreHandle()**

If the libstarcore.dll/so is loaded from script, apps can use this function to get the handle of the share library.
Note: This function always return 0 for lua, and returns 0 on windows phone 8.

5.3.27 Inject Script Class

1. **void _InjectClass(String ClassName,Class cl)**

This function is valid for java and csharp. If java or csharp class is loaded by a class loader, this function can be used to inject the class to cle.

5.4 Service group attribute

1. **SysObject=ServiceGroup._SysObject**
   get system defined object
2. **Int=ServiceGroup. _EnvStartType**
   service start type
   Return value lists below :
   0 start from directory contains multiple files.
   1 start from single file package.
3. **ParaPkg=ServiceGroup. _EnvPara**
   current service parameter
4. **ParaPkg =ServiceGroup. _EnvInputPara**
   current service input parameter
5. **Url =ServiceGroup. _EnvParentUrl**
   parent service Url
6. **SysDocClass=ServiceGroup. _SysDocClass**
   get system doc class
7. **ServiceGroup. _ProgramType**
   refer to macro definitions of “program run type”.
8. **ServiceGroup. _IsRootService**
   If the service is dynamic service which is loaded by import function, the return value is False, or else is true.

5.5 Service group function

5.5.1 public functions

9. **Service= _GetService(username, userpassword)**
   _GetServiceEx(ServiceName,username, userpassword);
   java: StarServiceClass _GetService(String username, String userpassword)
   java: StarServiceClass _GetServiceEx(String ServiceName,String username, String userpassword)
   Get current service object, the input parameter is user name and pasword.
   User name and password will be ignored at client service group.
10. **_MessageBox(Caption,Info) :**
    java: void _MessageBox(String Caption,String Info)
    Display message box, it is processed by host application.
11. **_Print(...) /_PrintError(AlarmLevel,string):**
    java: void _Print(String Args)
    java: void _PrintError(int AlarmLevel,String Args)
    For static language, only support _Print(String)/_PrintError(AlarmLevel,string).
12. **_ID();**
    java: int _ID()
    Returns service group id
13. **_IsServer();**
    java: boolean _IsServer()
    Returns True, means is server service group.
14. **_IsClient();**
    java: boolean _IsClient()
    Returns True, means is client service group.
15. **_IsDebug();**
    java: boolean _IsDebug()
    Returns True, means is debug service group.
16. **_IsServerClient();**
    java: boolean _IsServerClient()
    Returns True, means is server client service group.
17. **_IsObject(Object);**
    java: boolean _IsObject(Object Args)
    Returns True or False
18. **_IsParaPkg (ParaPkg);**
    java: boolean _IsParaPkg(Object Args)
    Returns True or False
19. **_IsQueryRecord (QueryRecord);**
    java: boolean _IsQueryRecord(Object Args)
    Returns True or False
20. **_IsBinBuf (BinBuf);**
    java: boolean _IsBinBuf(Object Args)

Returns True or False

21. **_IsSXml(SXml);**

java: boolean _IsSXml(Object Args)

Returns True or False

22. **_IsFunctionPara(FunctionPara);**

java: boolean _IsFunctionPara(Object Args)

Returns True or False

23. **_IsCommInterface(CommInterface);**

java: boolean _IsCommInterface(Object Args)

Returns True or False

24. **_TickCount ();**

java: int _TickCount()

Get the clock count in us

25. **_TickCountUs();**

java: long _TickCountUs()

If high precision is supported, then it will return high precision timer.

26. **_MD5(Str);**

java: String _MD5(String Args)

Returns MD5 of the string.

27. **Bool = _SetDataServerAddr (DirectConnect,DataServerInterface, DataServerName, DataServerPort, LocalDataServerInterface,LocalDataServerPort);**

java: boolean _SetDataServerAddr(boolean DirectConnect,String DataServerInterface, String DataServerName, int DataServerPort, String LocalDataServerInterface,int LocalDataServerPort)

Valid at server service group;

DirectConnect: ==True, when DataServerPort is valid, client will connect to it directly, otherwise, will be relayed by server.

DataServerInterface: DataServer interface, may be ““

DataServerName: DataServer Url.

DataServerPort: DataServer port number

LocalDataServerInterface: Local DataServer interface, may be””

LocalDataServerPort: Local DataServer port, 0 means invalid.

28. **_SetServerPara (MaxClientNumber, MaxDataServerConnectionNumber,DataServerOverTime);**

java: void _SetServerPara(int MaxClientNumber,int MaxDataServerConnectionNumber,int DataServerOverTime)

Set server parameter

29. **_QuyeryStatistic(ClientID);**

java: Object[] _QuyeryStatistic(int ClientID)

Get statistic info of CLE when ClientID is 0, or else returns statistic of special client. Return value is

int ClientConnectionNumber;

```
int     DebugConnectionNumber;
int     ServerConnectionNumber;
int     DataConnectionNumber;
int     ReceiveMsgItemNumber;
int     ReceiveMsgItemBytes;
int     SendMsgItemNumber;
int     SendMsgItemBytes;
int     SysSendQueueOccupyRate;
int     ObjSendQueueOccupyRate;

int   PeerDelayTicket;
```

30. **int = _Hash(String);**

java: int _Hash(String Args)

Get string hash value.

31. **_GetModulePath ();**

java: String _GetModulePath()

Get module path.

32. **_GetServicePath ();**

java: String _GetServicePath()

Get service default path

33. **_SetServicePath (Path);**

java: void _SetServicePath(String Args)

Set service default path

34. **_GetCurrentPath ();**

java: String _GetCurrentPath()

Get current path.

35. **_SetCurrentPath (Path);**

java: void _SetCurrentPath(String Args)

Set current path.

36. **Bool= _ServicePathIsSet();**

java: boolean _ServicePathIsSet()

Service default path is set or not.

37. **_GetSRPTempPath ();**

java: String _GetSRPTempPath()

Get temporary path

38. **_GetSRPConfigPath ();**

java: String _GetSRPConfigPath()

Get path of config file.

5.5.2 service sync function(valid at client)

1. **Bool = _IsInSync ();**

java: boolean _IsInSync()

Returns Ture means the service is in sync procedure.

2. **Bool = _IsServiceSync ();**

   java: boolean _IsServiceSync()

   Returns Ture means the service is in sync status.

3. **Bool = _WaitServiceSync(WaitTimeMs);**

   java: boolean _WaitServiceSync(int WaitTimeMs)

   Wait service becomes synchronous. If success, return value is True . WaitTimeMs is the maximum time (ms) to wait. Zero means wait forever.

5.5.3 service management function[called at server]

1. **Bool = ImportServiceEx (ServiceID,LoadRunModule=True);**

   java: boolean _ImportServiceEx(String ServiceID,boolean LoadRunModule)

   Import a service,ServiceID is UUID of the service,for example :"66efc37a-a16c-442b-bc2a-3df5b03b3294". Server should not load or create any service before the function is called. ServiceID should be registered at registry under key SOFTWARE\SRPLab\SRPServer.

2. **Bool = _ImportServiceWithPath (ServicePath,ServiceName,LoadRunModule=True);**

   java: boolean _ImportServiceWithPath(String ServicePath,String ServiceName,boolean LoadRunModule)

   Import a service, input parameters are service path and service name. Server should not load or create any service before the function is called. Under service path, directory which name is same with the service name must exist.

ServicePath is local path or network path, such as:http://www.XXX.com. If it equals to "http://srplab", then service is located at default srplab website.

If service name contains ".", then it is dynamic service, the function is same as ImportDynaService.

If service name starts with char "@", then the service file locates at local disk.

3. **Bool = _ImportService (ServiceName,LoadRunModule=True);**

   java: boolean _ImportService(String ServiceName,boolean LoadRunModule)

   Import a service, input parameter is service name. Server should not load or create any service before the function is called. ServiceName must be registeded at registry under key SOFTWARE\SRPLab\SRPServer.

If service name contains ".", then it is dynamic service, the function is same as ImportDynaService.

If service name starts with char "@", then the service file locates at local disk.

4. **servicename = _ImportDynaService (Url);**

   java: String _ImportDynaService(String Url)

   Import dynamic service, which may be local file or network file. Return value is service name.

   If Url starts with char "@", then the service file locates at local disk.

5. **Bool = _ImportServiceFromXmlBuf (Buf，LoadRunModule=True);**

   java: boolean _ImportServiceFromXmlBuf(String Buf,boolean LoadRunModule)

Import service from XML buffer. Server should not load or create any service before the function is called.

6. **Service= _CreateService/_CreateServiceEx (ServicePath,ServiceName, RootPass, FrameInterval, NetPkgSize, UploadPkgSize, DownloadPkgSize , DataUpPkgSize, DataDownPkgSize ,ServiceID="");**

   java: StarServiceClass _CreateService(String ServicePath,String ServiceName,String RootPass,int FrameInterval,int NetPkgSize,int UploadPkgSize,int DownloadPkgSize,int DataUpPkgSize,int DataDownPkgSize,String ServiceID)

   java: StarServiceClass _CreateServiceEx(String ServicePath,String ServiceName,String RootPass,int FrameInterval,int NetPkgSize,int UploadPkgSize,int DownloadPkgSize,int DataUpPkgSize,int DataDownPkgSize,String ServiceID)

   Server should not load or create any service before the function is called. RootPass is password of root user. FrameInterval is interval(10ms) between frame of the service. NetPkgSize is size of network package, which default is 10240(bytes); UploadPkgSize is size of data uploaded per frame by client, unit is byte and default is 2048;DownloadPkgSize is size of data downloaded per frame by client, unit is byte, default is 2048. Range of FrameIntervale is [2,100], NetPkgSize is [1024,100*1024]; UploadPkgSize/ DataUpPkgSize is [1024,100*1024]; DownloadPkgSize/DataDownPkgSize is [1024,100*1024].

DataUpPkgSize, DataDownPkgSize is valid only for independent data port.

ServicePath is path of new service, may be "". In this case, default path is used.
For example, suppose the new created service will be saved at directory:
C:AAA\BBB\service name\service files, then ServicePath should be set to "C:AAA\BBB"

CreateServiceEx: if BIN type files exist in the service path, then they are not deleted. Service should use ClearStatic function to clear static data.
CreateService: if BIN type files exist in the service path, then they will be deleted.

7. **Service = _LoadServiceEx (ServiceID,UserName,UserPass, LoadRunModule=True);**

   java: StarServiceClass _LoadServiceEx(String ServiceID,String UserName,String UserPass,boolean LoadRunModule)

   Load a service. Server should not load or create any service before the function is called. ServiceID should be registered in registry under key SOFTWARE\SRPLab\SRPServer.

8. **Service = _LoadServiceWithPath (ServicePath, ServiceName,UserName,UserPass,LoadRunModule=True);**

   java: StarServiceClass _LoadServiceWithPath(String ServicePath,String ServiceName,String UserName,String UserPass,boolean LoadRunModule)

   Server should not load or create any service before the function is called.

9. **Service = _LoadService (ServiceName,UserName,UserPass,LoadRunModule=True);**

   java: StarServiceClass _LoadService(String ServiceName,String UserName,String UserPass,boolean LoadRunModule)

   Server should not load or create any service before the function is called.

10. **_ClearService ();**

    void _ClearService()

For server service group, service will be unloaded.

For client service group, connection will be closed.

11. _ClearServiceEx();

java: void _ClearServiceEx()

For server service group, service will be unloaded.

For client service group, connection will be closed.

The function will be processed for all service groups.

12. Bool = _ExportServiceHeader(ServiceName,Path="");

java: boolean _ExportServiceHeader(String ServiceName,String Path)

Export service header files for C++. Path may be "", in this case, output will be written to default service path.

13. Bool = _ XmlToService (SXml,DataPath,SegmentName,PrintFunc=None);

java: boolean _XmlToService(StarSXmlClass SXml,String DataPath,String SegmentName,String PrintFuncName)

Another function for creating service, which uses xml file as input. Its syntax is described in other documents.

14. Bool = _XmlToService_P (SXml,DataPath,SegmentName,CallBackProc);

for lua, ruby, python, this function is same as _XmlToService

java: boolean _XmlToService_P(StarSXmlClass SXml,String DataPath,String SegmentName,StarSrvGroupInfoInterface CallBackProc)

```
public interface StarSrvGroupInfoInterface{
    public void Invoke(Object SrvGroup,String Info);
}

c#: bool _XmlToService_P(StarSXmlClass SXml,String DataPath,String SegmentName,StarSrvGroupInfoInterface CallBackProc);

public delegate void StarSrvGroupInfoInterface(Object SrvGroup,String Info);
```

15. Bool =_ XmlToServiceEx (FileName,PrintFunc=None);

java: boolean _XmlToServiceEx(String FileName,String PrintFuncName)

Another function for creating service, which uses xml file as input. Its syntax is described in other documents.

```
def InfoFunc(Info ) :
    print( Info)

java/c#:
public void PrintFuncName(String Info)
{
}
```

16. Bool =_ XmlToServiceEx_P(FileName,CallBackProc);

for lua, ruby, python, this function is same as _XmlToServiceEx

java: boolean _XmlToServiceEx_P(String FileName,StarSrvGroupInfoInterface CallBackProc)

```
public interface StarSrvGroupInfoInterface{
      public void Invoke(Object SrvGroup,String Info);
}

c#:     bool     _XmlToServiceEx_P(String     FileName,StarSrvGroupInfoInterface
CallBackProc);

public delegate void StarSrvGroupInfoInterface(Object SrvGroup,String Info);
```

5.5.4 client connect to server

1. **_Connect (ServerInterface,ServerName,PortNumber,RetrySecond, UserName, UserPassword, ParaPkg=None, ServiceGroup_ClientConnectProc=None);**

   java: int _Connect(String ServerInterface,String ServerName,int PortNumber,int RetrySecond,String UserName,String UserPassword,StarParaPkgClass ParaPkg,String ServiceGroup_ClientConnectProc)

2. **_Connect_P (ServerInterface,ServerName,PortNumber,RetrySecond, UserName, UserPassword, ParaPkg=None, StarSrvGroupConnectInterface);**

   for lua, ruby, python, this function is same as __Connect

   java: int _Connect_P(String ServerInterface,String ServerName,int PortNumber,int RetrySecond,String UserName,String UserPassword,StarParaPkgClass ParaPkg,StarSrvGroupConnectInterface CallBackProc)

   ```
   public interface StarSrvGroupConnectInterface{
      public void Invoke(Object SrvGroup,int uMes,int ConnectionID,int
   LinkInterfaceStatus,String ServerName,int PortNumber);
   }
   c#: int _Connect_P(String ServerInterface,String ServerName,int PortNumber,int
   RetrySecond,String UserName,String UserPassword,StarParaPkgClass
   ParaPkg,StarSrvGroupConnectInterface CallBackProc);

   public delegate void StarSrvGroupConnectInterface(Object SrvGroup,int uMes,int
   ConnectionID,int LinkInterfaceStatus,String ServerName,int PortNumber);
   ```

3. **ServiceGroup._ConnectEx (ServiceName,RetrySecond, UserName,UserPassword, ParaPkg=None, ServiceGroup_ClientConnectProc=None);**

   java: int _ConnectEx(String ServiceName,int RetrySecond,String UserName,String UserPassword,StarParaPkgClass ParaPkg,String ServiceGroup_ClientConnectProc)

4. **ServiceGroup._ConnectEx_P (ServiceName,RetrySecond, UserName,UserPassword, ParaPkg, StarSrvGroupConnectInterface);**

   for lua, ruby, python, this function is same as __ConnectEx

   java: int _Connect_P(String ServiceName,int RetrySecond,String UserName,String UserPassword,StarParaPkgClass ParaPkg,StarSrvGroupConnectInterface CallBackProc)

```
c#: int _Connect_P(String ServiceName,int RetrySecond,String UserName,String
UserPassword,StarParaPkgClass ParaPkg,StarSrvGroupConnectInterface
CallBackProc);
```

Valid at client service group. Client connects to server. Return value is ConnectionID, and zero means failure. Prototype of the function is:

```
def ServiceGroup_ClientConnectProc(self,uMes, ConnectionID,
LinkInterfaceStatus,ServerName, PortNumber ) :
```

```
function ServiceGroup:ClientConnectProc(uMes, ConnectionID,
LinkInterfaceStatus,ServerName, PortNumber )
```

```
JAVA/c#:
public void ClientConnectProc(int uMes,int ConnectionID,int
LinkInterfaceStatus,String ServerName,int PortNumber)
{
}
```

uMes:

0 //---after the event ,connection has been setup successfully, and will be followed by service initialization message.

1 //---if ConnectionID is zero, indicates the connection is released and no callback will be created latter. Otherwise, CLE will retry to connect.

2 //---service initialization is failed at client side.

3 //---service initialization is successful at client side.

4 //---service finish sync at client side.

5 //---connection is closed.

Interface is string, which format is :

"Host=interface address;if=share library file name(include extension);site=share library download address, ftp/http address ;para=parameter string"

for example:" host=192.168.0.1;if=SRPTcpLinkInterface1.dll;site=ftp://127.0.0.1"

1. **ConnectionID = _SConnect (ServerInterface,ServerName,PortNumber, UserName, UserPassword,ParaPkg = nil/None);**

   java: int _SConnect(String ServerInterface,String ServerName,int PortNumber,String UserName,String UserPassword,StarParaPkgClass ParaPkg)

2. **ConnectionID =_SConnectEx(ServiceName,UserName, UserPassword, ParaPkg = nil/None);**

   java: int _SConnectEx(String ServiceName,String UserName,String UserPassword,StarParaPkgClass ParaPkg)

   Setup connection to server, wait, and returns ID of the connection after service is loaded.

Interface is string, which format is :

“Host=interface address;if=share lib file name(include extension);site=share lib download address, ftp/http address ;para=parameter string”
for example:" host=192.168.0.1;if=SRPTcpLinkInterface1.dll;site=ftp://127.0.0.1"

3. **Service =_Connect2 (ServerInterface,ServerName,PortNumber, UserName, UserPassword,SysRootItemName,ParaPkg = None);**
   java: StarServiceClass _Connect2(String ServerInterface,String ServerName,int PortNumber,String UserName,String UserPassword,String SysRootItemName,StarParaPkgClass ParaPkg)
4. **Service =_ConnectEx2(ServiceName,UserName, UserPassword, SysRootItemName,ParaPkg = None);**
   java: StarServiceClass _Connect2Ex(String ServiceName,String UserName,String UserPassword,String SysRootItemName,StarParaPkgClass ParaPkg)
   Setup connection to server,and wait service becomes sync.The return value is service object.

5. **_DisConnect ();**
   java: void _DisConnect()

Close connection.

6. **Bool =_IsConnect ();**
   java: boolean _IsConnect()

Valid at client service group, which is used to determine whether the connection is established.

5.5.5 trigger hyper connection

1. **_HyperLink (URL,bool = CreateNewWindow);**
   java: void _HyperLink(String URLArg,boolean CreateNewWindow)

Valid at client and server, trigger a new hyper connection. This function will send a callback message to host application.

5.5.6 trigger app event

1. **_AppEvent(VS_ULONG EventID,VS_CHAR *EventInfo);**
   java: void _AppEvent(int EventID,String EventInfo)

Valid ar client and server, create callback message:MSG_APPEVENT.

5.5.7 QueryRecord object

1. **_NewQueryRecord ();**
   java: StarQueryRecordClass _NewQueryRecord()

5.5.8 parapkg object

1. **_NewParaPkg (Arg1,Arg2,…);**
   java: StarParaPkgClass _NewParaPkg(Object...Args)

5.5.9 binbuf object

1. **_NewBinBuf();**
   java: StarBinBufClass _NewBinBuf()

5.5.10 SXML object

1. **XML =_NewSXml()**
   java: StarSXmlClass _NewSXml()

5.5.11 function para object

1. **FuncPara =_NewFunctionPara()**
   java: StarFunctionParaClass _NewFunctionPara()

5.5.12 CommInterface object

1. **CommInterface =_NewCommInterface()**
   java: StarCommInterfaceClass _NewCommInterface()

5.5.13 execute script segments or files

Note: The execution of script may be not in the same thread with the caller

1. **bool = _RunScript(ScriptInterface,ScriptBuf,ModuleName);**
   java: boolean _RunScript(String ScriptInterface,String ScriptBuf,String ModuleName)

Static script language including java/c# does not support this function.
ModuleName is name of the module, which may be NULL. This Parameter is only valid for lua and python.

2. **bool = _RunScriptEx(ScriptInterface,BinBuf,ModuleName);**
   java: boolean _RunScriptEx(String ScriptInterface,StarBinBufClass BinBuf,String ModuleName)

BinBuf is created by _NewBinBuf
Static script language including java/c# does not support this function.
ModuleName is name of the module,which may be NULL. This Parameter is only valid for lua and python.

3. **bool = _DoFile(ScriptInterface,FileName)/ _DoFileEx(ScriptInterface,FileName, ModuleName);**
   java: boolean _DoFile(String ScriptInterface,String FileName)
   java: boolean _DoFileEx(String ScriptInterface,String FileName,String ModuleName)

If ScriptInterface is ““, default is lua. It can take value from lua,python,ruby,java,c#, or others registered script languages.
ModuleName is name of the module,may be “” or NULL. This Parameter is only valid for lua

and python and java and csharp. For java and csharp, ModuleName is the init class name. For example, the ModuleName is “com.srplab.www.test”.
ModuleName should not set to “cmd”, case insensitive.

5.5.14 others function

How to process such functions depends on environment. The corresponding command is send to host program by CLE.

1. **_IsDefaultServer ();**
   java: boolean _IsDefaultServer()
   Whether the server is default server, returns bool.
2. **_IsWindowVisible ();**
   java: boolean _IsWindowVisible()
   Whether manager window is visible, returns bool.
3. **_HideWindow ();**
   java: void _HideWindow()
   Hide manager window
4. **_ShowWindow ();**
   java: void _ShowWindow()
   Show manager window.
5. **_SetCaption(Caption);**
   java: void _SetCaption(String Caption)
   Set manager window caption, which is a string.
   When create and load a service, the caption of manager window is set automaticly. Therefore, the function should be called after service is created or loaded.
6. **_ExitVSSystem (ErrorInfo);**
   java: void _ExitVSSystem(String ErrorInfo)
   exit program.
7. **_StartVSService (ServiceID);The function will be provided in the future.**
   java: void _StartVSService(String ServiceID)
   Start a service
   ServiceID is the service ID to be started.
8. **_IsAppActive();**
   java: boolean _IsAppActive()
   Whether application is active, returns bool
9. **_SetIdleActive(True/False);**
   java: void _SetIdleActive(boolean Args)
10. **_GetVersion ();**
    java: Object[] _GetVersion()
    Get cle version, return version table.
11. **_GetVersionInfo ();**
    java: String _GetVersionInfo()
    Get cle version information, returns string.

12. **_SetColor(Text,Explane,ObjName,AttrType,Number,Error);**

java: void _SetColor(int Text,int Explane,int ObjName,int AttrType,int NumberColor,int ErrorColor)

set text color

13. **_SetBkColor(BkColor);**

java: void _SetBkColor(int BkColor)

set text background color.

14. **_SetClientBkColor (BkColor);**

java: void _SetClientBkColor(int BkColor)

set client window background color

15. **_ShowStatusMenu (showmenuflag,showstatusflag);**

java: void _ShowStatusMenu(boolean showmenuflag,boolean showstatusflag)

Whether to show menu or status bar, input is bool.

16. **_ClearClientWnd ();**

java: void _ClearClientWnd()

clear client window

17. **_HideClientWnd ();**

java: void _HideClientWnd()

Hide client window.

18. **_ShowClientWnd ();**

java: void _ShowClientWnd()

Show client window.

19. **_SetClientSize (Width,Height);**

void _SetClientSize(int Width,int Height)

Set client window width and height.

20. **Width,Height =_GetClientSize ();**

java: Object[] _GetClientSize()

Get client window width and height.

21. **KernelAllocSize , DataAllocSize , AppAllocSize , ScriptMemoryUsed =_MemorySize ();**

java: Object[] _MemorySize()

KernelAllocSize: memory of core.

DataAllocSize: memory of static data

AppAllocSize: memory of application.

ScriptMemoryUsed: memory of lua.

22. **_SetWindowStyle (bool :SystemMenuFlag, MinimizeFlag, MaximizeFlag, ShowBorderFlag, SizeableFlag);**

java: void _SetWindowStyle(boolean SystemMenuFlag,boolean MinimizeFlag,boolean MaximizeFlag,boolean ShowBorderFlag,boolean SizeableFlag)

Set window parameter.

23. **_MoveWindow (X, Y, nWidth, nHeight, bool RepaintFlag);**

java: void _MoveWindow(int X,int Y,int nWidth,int nHeight,boolean RepaintFlag)

Move window, If nWidth,nHeight equal to 0, then current window size remains unchanged.

24. **X, Y, nWidth, nHeight = _GetWindowPos ();**

java: Object[] _GetWindowPos()

get client position.

25. _SetWindowStatus (int Status);

java: void _SetWindowStatus(int Status)

Status //--0 normal, 1 minimize, other maximize

5.5.15 RawSocket function

If RawSocket fails to setup connection, it will not retry; Application should retry to setup the connection again.

1. int =_SetupSocketServer (Interface,PortNumber,ServiceGroup_AcceptFunc);

java: int _SetupSocketServer(String LInterface,int PortNumber,String AcceptFunc)

Set up a SOCKET server. If returns 0, then means failure, or else is the ID of the connection.

Interface is link-layer interface, may be ""

```
def ServiceGroup_AcceptFunc( self,ConnectionID, IPAddr, IPPort, MachineID ) :

    return ClientFunc    #-- should return the function which processes the connection.
```

```
function ServiceGroup:AcceptFunc( ConnectionID, IPAddr, IPPort, MachineID )

    return ClientFunc    -- should return the function to processes the connection.
end
```

```
java/c#:
public String AcceptFunc(int ConnectionID, String IPAddr, int IPPort, int MachineID)
{
}
```

MachineID is the state machine ID allocated for the client.

2. int =_SetupSocketServer _P(Interface,PortNumber,CallBackProc);

for lua, ruby, python, this function is same as _SetupSocketServer

java: int _SetupSocketServer_P(String LInterface,int PortNumber,StarSrvGroupAcceptFuncInterface CallBackProc)

```
public interface StarSrvGroupAcceptFuncInterface{
    public Object Invoke(Object SrvGroup,int ConnectionID, String IPAddr, int IPPort, int MachineID);
}
```

the returned object should be the instance of interface:

```
public interface StarSrvGroupClientFuncInterface{
    public void Invoke(Object SrvGroup,int uMes,int MachineID, int LinkInterfaceStatus,Object Para1, Object Para2);
}
```

c#: int _SetupSocketServer_P(String LInterface,int

```
PortNumber,StarSrvGroupAcceptFuncInterface CallBackProc);

public delegate object StarSrvGroupAcceptFuncInterface(object SrvGroup,int
ConnectionID, string IPAddr, int IPPort, int MachineID);
```
the returned object should be the instance of delegate:
```
public delegate void StarSrvGroupClientFuncInterface(object SrvGroup, int uMes,
int MachineID, int LinkInterfaceStatus, object Para1, object Para2)
```

3. int =_SetupSocketClient (ServerInterface ,ServerName, PortNumber, ServiceGroup_ClientFunc);

java: int _SetupSocketClient(String ServerInterface,String ServerName,int PortNumber,String ClientFunc)

Setup a SOCKET client, which return the request ID which can be used to close the connection. The ID will be invalid after the callback function is called.

Interface is link-layer interface, may be ““

```
def ServiceGroup_ClientFunc( self,uMes,MachineID, LinkInterfaceStatus,Para1, Para2 ) :
    uMes == 1   :   VS_SOCKET_ONCONNECT,   Para1 is ipaddress, Para2 is port
    uMes == 2   :   connection is closed
    uMes == 3   :   fail to setup connection
    uMes == 4   :   receive one package ,Para1 is ParaPkg.
```

```
function ServiceGroup:ClientFunc( uMes,MachineID, LinkInterfaceStatus,Para1, Para2 )
    uMes == 1   :   VS_SOCKET_ONCONNECT,   Para1 is ipaddress, Para2 is port
    uMes == 2   :   connection is closed
    uMes == 3   :   fail to setup connection
    uMes == 4   :   receive one package ,Para1 is ParaPkg
    return
end
```

```
java/c#:
public void ClientFunc( int uMes,int MachineID, int LinkInterfaceStatus,Object Para1, Object
Para2 ){
}
```

LinkInterfaceStatus =0 normal 1 download, 2 error.

4. int =_SetupSocketClient_P (ServerInterface ,ServerName, PortNumber, CallBackProc);

for lua, ruby, python, this function is same as _SetupSocketClient

```
java: int _SetupSocketClient_P(String ServerInterface,String ServerName,int
PortNumber,StarSrvGroupClientFuncInterface CallBackProc)

public interface StarSrvGroupClientFuncInterface{
    public void Invoke(Object SrvGroup,int uMes,int MachineID, int
LinkInterfaceStatus,Object Para1, Object Para2);
}
```

```
c#: int _SetupSocketClient_P(String^ ServerInterface,String^ ServerName,Int32
PortNumber,StarSrvGroupClientFuncInterface^ CallBackProc);

public delegate void StarSrvGroupClientFuncInterface(object SrvGroup, int uMes,
int MachineID, int LinkInterfaceStatus, object Para1, object Para2)
```

5. **_CloseSocketConnect (ConnectionID/MachineID);**

java: void _CloseSocketConnect(int ConnectionID_MachineID)

Close connection. Input may be connection ID, or request ID, or client MachineID.

6. **Bool =_SocketSend (MachineID,ParaPkg,bool assure);**

java: boolean _SocketSend(int MachineID,StarParaPkgClass ParaPkg,boolean Assure)

send one package.

5.5.16 Timer function

1. **_SetTimer (Ticket, ServiceGroup**_Func**, int Arg1, int Arg2)**

java: int _SetTimer(int Ticket,String TimerFunc,int Arg1,int Arg2)

Function is function which should be defined in service group.

Ticket is the interval which uint is 10ms;

calling format:

a = **ServiceGroup**._SetTimer(100,Func, 0,0)

Parameter should be number, and the return value is TimerID

def **ServiceGroup**_Func(self,TimerID,Arg1,Arg2) :

`self is service group object`

calling format:a = ServiceGroup:_SetTimer(100,Func, 0)

Parameter should be number, and the return value is TimerID

function ServiceGroup:Func(TimerID,Arg1,Arg2)

end

```
java: public void Func(int TimerID,int Arg1,int Arg2)
      {
         return;
      }
```

2. **_SetTimer_P (Ticket, int Arg1, int Arg2, CallBackProc)**

for lua, ruby, python, this function is same as _SetTimer

```
java: int _SetTimer_P(int Ticket,int Arg1,int Arg2,StarSrvGroupTimerInterface
CallBackProc)

public interface StarSrvGroupTimerInterface{
      public void Invoke(Object SrvGroup,int TimerID,int Arg1,int Arg2);
}
```

```
c#: int _SetTimer_P(int Ticket,int Arg1,int Arg2,StarSrvGroupTimerInterface
CallBackProc);

public delegate void StarSrvGroupTimerInterface(Object SrvGroup,int TimerID,int
Arg1,int Arg2);
```

3. _KillTimer (TimerID)

java: void _KillTimer(int TimerID)

TimerID is the ID of the timer.

5.5.17 Restart function

1. _ProgramRestart();

java: void _ProgramRestart()

The function is valid only when cle is started by manager program.

5.5.18 Http up/download function

1. _HttpDownLoad (ServerUrl,ClientPath,FileName);

java: void _HttpDownLoad(String ServerUrl,String ClientPath,String FileName)

FileName is the file name. The download process is asynchornous and the file downloaded will be saved at local.

SrvGroup._HttpDownLoad("http://www.srplab.com/Files","e:","srirrlicht_index.htm")

2. _HttpDownLoadAbort ();

java: void _HttpDownLoadAbort()

Cancel all http/ftp downloads.

3. _RegWebDownFunction (ServiceGroup_Func);

java: void _RegWebDownFunction(String DownFunc)

The prototype is :

```
def ServiceGroup_Func (self,uMes,FileName,MaxSize,CurSize)

function ServiceGroup:Func (uMes,FileName,MaxSize,CurSize)

end
```

```
java:
        public void DownFunc(int uMes,String FileName,long MaxSize,long CurSize)
        {
            return;
        }
```

uMes:

0 //---Start download
1 //---download process
2 //---finish
3 //---error

4. **_RegWebDownFunction_P(CallBackProc);**
for lua, ruby, python, this function is same as _RegWebDownFunction

```
java: void _RegWebDownFunction_P(StarSrvGroupWebDownInterface CallBackProc)

public interface StarSrvGroupWebDownInterface{
    public void Invoke(Object SrvGroup,int uMes,String FileName,long MaxSize,long CurSize);
}

c#: void _RegWebDownFunction_P(StarSrvGroupWebDownInterface CallBackProc);

public delegate void StarSrvGroupWebDownInterface(object SrvGroup,int uMes,string FileName,long MaxSize,long CurSize);
```

5.5.19 set current Url and service parameter

1. **_SetEnvCurrentUrl (Url)**

```
java: void _SetEnvCurrentUrl(String Args)
```

Set current service Url

2. **_SetEnvPara (ParaPkg)**

```
java: void _SetEnvPara(StarParaPkgClass ParaPkg)
```

set current service parameter

5.5.20 script edit[Windows]

1. **Bool=_OpenLuaEdit (Module,Config,bool CloseEnable)**

```
java: boolean _OpenLuaEdit(String Module,int Config,boolean CloseEnable)
```

Open editor which is compiled to single share library SRPLuaEdit.DLL. The host application is responsible for windows message loop.
Config is the combination of the following value:
#define SRPLUAEDITMODULECONFIG_SCRIPTCONSOLE 0x00000001
#define SRPLUAEDITMODULECONFIG_PROJECT 0x00000002
#define SRPLUAEDITMODULECONFIG_SRPDOC 0x00000004
Module is reserved.

2. **_LuaEditDisp (Info)**

```
java: void _LuaEditDisp(String Info)
```

Display information in editor.

3. **_LuaEditHelp (Type,HelpFile)**

```
java: void _LuaEditHelp(int Type,String HelpFile)
```

Type=0 help info
Display help in editor. Input is help file name which is located on local disk.

=1 Examples project, at this time, the input is help string.

4. **_CloseLuaEdit ()**

```
java: void _CloseLuaEdit()
```

Close editor.

5.5.21 service path

1. **_InsertSearchPath (String Path);**

```
java: void _InsertSearchPath(String Path)
```

Set service search path.

2. **_ClearSearchPath ();**

```
java: void _ClearSearchPath()
```

Clear service search path.

3. **Path=_FirstSearchPath (QueryRecord);**

```
java: String _FirstSearchPath(StarQueryRecordClass QueryRecord)
```

get first search path.

4. **Path=_NextSearchPath (QueryRecord);**

```
java: String _NextSearchPath(StarQueryRecordClass QueryRecord)
```

get next search path.

5.5.22 get doc object registered

1. **Object,DocName= _FirstDoc(QueryRecord)**

```
java: Object[] _FirstDoc(StarQueryRecordClass QueryRecord)
```

Get first doc object registered.

2. **Object,DocName = _NextDoc(QueryRecord)**

```
java: Object[] _NextDoc(StarQueryRecordClass QueryRecord)
```

Get next doc object registered.

3. **_RegisterDoc(Object,DocName)**

```
java: void _RegisterDoc(Object ObjectArg,String DocName)
```

Register Doc object.

4. **_UnRegisterDoc(Object)**

```
java: void _UnRegisterDoc(Object ObjectArg)
```

Unregister Doc object.

5.5.23 get static data version

1. **Version=_GetStaticVersion (BinBuf/FileName)**

```
String _GetStaticVersion(Object Arg)
```

Compute static data version, input is file name or binary buffer.

5.5.24 ClipBoard[Windows]

1. **_ToClipBoard(String)**

java: void _ToClipBoard(String Arg)

Copy string to clipboard.

2. **String=_FromClipBoard()**

java: String _FromClipBoard()

Get string from clipboard.

5.5.25 Load service from Url

1. **int Result=_RunFromUrl(Url,Type,bool WaitFlag)**

java: int _RunFromUrl(String Url,int Type,boolean WaitFlag)

Note: This function should not be called in normal case.

Type:

VS_RUMFROMURL_NORESTART 0
VS_RUMFROMURL_RESTART 1
VS_RUMFROMURL_WAITRESTART 2

Result:

SRPLOADPROCESS_OK 0
SRPLOADPROCESS_BUSY -1
SRPLOADPROCESS_DISABLE -2
SRPLOADPROCESS_FAIL -3

After Url may be attach parameter such as"?parameter";
hostip=XXX: Redirect host IP, which is valid for files on http or ftp server. In this case, the url uses this ip address other than returned by DNS.
depend=#depended service 1,# depended service 2, depended service 3; '#' is in front of the depended service name, which should be downloaded from starcore website, otherwise downloaded from parent url ["depend=" without spaces]
script=lua/python/..; ["script=" without spaces]
The last string is command argument string, service can read it from EnvInputPara
for examples:

http://XXX/XX?depend=AAA,#bbb;para1=111
http://XXX/XX?depend=AAA,#bbb;script=python;para1=111
http://XXX/XX?para1=111

depend,script,and command string are seperated by ";".

If use FTP, the user name and password is input as follow:
ftp://XXX?USER=XXX;PASS=XXX/XXX/XXX
ftp://XXX:21?USER=XXX;PASS=XXX/XXX/XXX

If hostip is set, then when download, url will be replaces by hostip. For example:
ftp://XXX?USER=XXX;PASS=XXX/XXX/XXX?hostip=127.0.0.1,

ftp://XXX:21?USER=XXX;PASS=XXX/XXX/XXX?hostip=127.0.0.1,
Download will be started from ftp://127.0.0.1 和 ftp://127.0.0.1:21

If Url starts with char ”@”, then the service file locates at local disk.

5.5.26 Set debug and client port

Valid for service group 0

1. **Bool=_SetClientPort (“Interface”,Portnumber)**
   java: boolean _SetClientPort(String LInterface,int Portnumber)
   Interface may be ““
2. **Bool =_SetDebugPort (“Interface”,Portnumber)**
   java: boolean _SetDebugPort(String LInterface,int Portnumber)
   Interface may be ““

Interface is string, which format is :
“Host=interface address;if=share lib file name(include extension);site=share library download address, ftp/http address ;para=parameter string”
for example:" host=192.168.0.1;if=SRPTcpLinkInterface1.dll;site=ftp://127.0.0.1"

5.5.27 set Telnet,Web,and output port

Valid for service group 0

1. **Bool= _SetTelnetPort (Portnumber)**
   java: boolean _SetTelnetPort(int Portnumber)
2. **Bool= _SetOutputPort (Host,Portnumber)**
   java: boolean _SetOutputPort(String Host,int Portnumber)

Using syslog to recrive infromation
Output is coded as UTF-8 format.

3. **Bool= _SetWebServerPort (Host,Portnumber, ConnectionNumber, PostSize)**
   java: boolean _SetWebServerPort(String Host,int Portnumber,int ConnectionNumber,int PostSize)

Host is Url, which may be set to None
ConnectionNumber: the maximum connection number
PostSize : permit upload size, unit is Kbytes.

5.5.28 service register and alloc Cooperator

1. **Bool= _RegisterServer (ServiceName)**
   java: boolean _RegisterServer(String ServiceName)
2. **_AllocCooperator (ServiceName)**
   java: void _AllocCooperator(String ServiceName)
3. **_FreeCooperator(ServiceName)**
   java: void _FreeCooperator(String ServiceName)
4. **Interface,Host,Port= _GetServerUrlInfo ()**
   java: Object[] _GetServerUrlInfo()

Local function to get parameters for client to connect

5.5.29 WebService object refresh

1. **_WebServiceRefresh()**
   void _WebServiceRefresh()

5.5.30 get WSDL

1. **bool =_GetWSDL(int WSDLVersion, string Host, BinBuf)**
   java: boolean _GetWSDL(int WSDLVersion,String Host,StarBinBufClass BinBuf)
   WSDLVersion: reserved, current is version 1.1.
   Host: If equals to nil, then uses default host.
   Mapping type:
   If object sets WebServiceFlag, then it acts as a PortType mapped to WSDL.And the functions defined in object act as Operation.

5.5.31 string format convert

1. **String= _ToAnsi(Lang,String)**
2. **String= _FromAnsi(Lang,String)**

for windows:
Lang should be “utf8” or “ansi”,or “.XXX”, XXX is number of codepage, such as “.950”

note:
java and c# does not support this function

5.5.32 get platform information

1. **EnvTag= _GetConfigEnvTag()**
   java: String _GetConfigEnvTag()
   Get environment Tag which is set through VS_STARCONFIGEX at cle initial process.
   Three types are predefined:
"", "noloop", "activex"
2. **bool debugserver port result,client port config result,telnet port config result,WebServer port config result = _GetConfigResult()**
   java: Object[] _GetConfigResult()
3. **_GetConfig (SXml)**
   Get config parameter.
   java: void _GetConfig(StarSXmlClass SXml)
4. **Host=_GetConfigHost()**
   java: String _GetConfigHost()
   Get config Host and Web port number.

5.5.33 client download callback (used at server service group)

1. **RefValue=_RegFileReqCallBack(SrvGroup.Function);**
   java: long _RegFileReqCallBack(String Function)
2. **RefValue=_RegFileReqCallBack_P(CallBackProc);**
   for lua, ruby, python, this function is same as _RegFileReqCallBack
   java: long _RegFileReqCallBack_P(StarSrvGroupFileReqInterface CallBackProc)

   public interface StarSrvGroupFileReqInterface{
   public boolean Invoke(Object SrvGroup,int ClientID,int ClientPrivateTag,int uMsg,boolean DataFile,int DataSize,String FileName_ObjectID,int UniqueDataUnitID,String Version);
   }

   c#: long SrvGroup_RegFileReqCallBack_P(object selfobj,StarSrvGroupFileReqInterface CallBackProc);

   public delegate bool StarSrvGroupFileReqInterface(object SrvGroup,int ClientID,int ClientPrivateTag,int uMsg,Boolean DataFile,int DataSize,String FileName_ObjectID,int UniqueDataUnitID,String Version);
3. **_UnRegFileReqCallBack(RefValue);**
   java: void _UnRegFileReqCallBack(long RefValue)

Function prototype:
def ServiceGroup_CallBackProc(self,ClientID, ClientPrivateTag, uMsg, DataFile, DataSize, FileName Or ObjectID, UniqueDataUnitID,Version)

java:
public boolean Function(int ClientID,int ClientPrivateTag,int uMsg,boolean DataFile,int DataSize,String FileName_ObjectID,int UniqueDataUnitID,String Version)
{
return true/false;
}

If DataFile = true, then is FileName
If DataFile = false, then is ObjectID.
UniqueDataUnitID represents APPID of static data, and Version represents the version of static data.
uMsg takes value:
0 : start to download
4 : start to upload
if returns true, data can be downloaded or uploaded, or else can not be downloaded or uploaded.

5.5.34 Dispatch callback

1. **void _RegDispatchCallBack(SrvGroup_Function)**

```
java: void _RegDispatchCallBack(String Function)
```

If input is None, then previous callback will be canceled.

def SrvGroup_Function(self)

```
java:
        public void Function()
        {
            return;
        }
```

Should only register on service group 0, and only once.

2. **void _RegDispatchCallBack_P(CallBackProc)**
   for lua, ruby, python, this function is same as _RegDispatchCallBack
   for python, support decorator.

```
java: void _RegDispatchCallBack_P(StarSrvGroupDispatchInterface CallBackProc)

public interface StarSrvGroupDispatchInterface{
    public void Invoke(Object SrvGroup);
}
c#: void _RegDispatchCallBack_P(StarSrvGroupDispatchInterface^ CallBackProc);

public delegate void StarSrvGroupDispatchInterface(Object SrvGroup);
```

5.5.35 Raw Object Interface

Raw object supports lua, python, ruby, java, and c#

1. **boolean _InitRaw(String ScriptInterface,StarServiceClass Service)**

This function is used to init script interface for raw function.

2. **boolean _LoadRawModule(String ScriptInterface,String ModuleName,String FileOrString, boolean IsString)**

Load Raw Module, which may be lua module, python module, ruby module, java class library, csharp class library. for version 2.0, the above four scripts are supported.

ModuleName : if has been loaded, the function does nothing. Module name may be input null for global name space.

RunString : may be file or string buf, which will be executed.

IsString : true for string, false for file.

ErrorInfo : may be null;

for lua :

if RunString == true,then load and execute lua code.

if RunString == false,then load and execute lua file.

for python/ruby :

If IsString == false, and FileOrString is valid, then load python file as module.

If IsString == true/false, and FileOrString is invalid, using python import function to load module

If IsString == true, and FileOrString is valid, then load python code as module.

for java :

IsString will be ignored.

If FileOrString is valid, then take FileOrString as class library file. Or else, take ModuleName as class library file.

for csharp :

IsString will be ignored.

If ModuleName is valid and FileOrString is invalid, then load Assembly by name.

If FileOrString is valid, then load Assembly by file.

3. boolean _LoadRawModuleEx(String ScriptInterface,String ModuleName,StarObjectClass object)

This function is valid for csharp, object should be raw assembly object.

4. boolean _DefScriptRawType(String ScriptInterface,String ModuleName,String FileOrString, boolean IsString)

The function is reserved.

5. int _RegScriptRawType(String ScriptInterface,String TypeGroupName,int GroupIndex,String TypeName)

The function is reserved.

6. int _GetScriptRawType(String ScriptInterface,String TypeGroupName,String TypeName)

The function is reserved.

7. String[] _GetScriptRawTypeEx(int RawType)

The function is reserved.

5.5.36 Get Last Error

1. int _GetLastError()

2. String _GetLastErrorInfo()

5.5.37 UnLockGC Log

1. void _LogObjectFreeByUnLock(boolean Flag)

If Flag == true and object is freed by UnLockGC/DelRefEx or script, a message is output to console.

5.5.38 _SUnLockGC

1. void _SUnLockGC()

This function is provided for check all cle object's with ReleaseOwnerEx record and trigger _SUnLockGC function of the corresponding script interface.

5.5.39 Get Path and Local IP

1. String _GetCorePath()

2. String _GetUserPath()

3. String _GetLocalIP()
Note: This function always returns "127.0.0.1" for android
4. String[] _GetLocalIPEx()
Note: This function always returns the address of localhost for android.

5.5.40 Get Number of Object created[2.5.1]

1. int _GetObjectNum()

5.5.41 Active Script and Pre-compile Script Segment [2.5.1]

1. Bool[2] = _ActiveScriptInterface(String ScriptInterfaceName)
Bool[0]: true for success
Bool[1]: true if the script supports online compile.
2. Object[2] = _PreCompile(String ScriptInterfaceName,String ScriptSegment)
Compile the scriptsegment to check there is syntax error or not.
Object[0]: boolean value, true for success
If Object[0] is false, then,
Object[1] is string value, if the length of Object[1] is zero, the scriptsegment is not finish, more script sentence needed. Or else, Object[1] returns the compiler error info.
For example,
_PreCompile("python","print(123)")

5.6 Service object

5.6.1 attribute

1. **Service._Path**
   service path.
2. **Service._Name**
   service name.
3. **Service._FrameTimerInterval**
   Get interval between frames. The return is number which unit is 10ms.
4. **Service._ID**
   ID of the service
5. **Service._FrameTicket**
   Frame ticket of the service.
6. **Service._ServiceGroup**
   Service group which service belongs to.

5.6.2 basic function

1. **_DeactiveAll ()**
   java: void _DeactiveAll()
   deactive all objects.
2. **_GetObject (ObjectName)**
   java: StarObjectClass _GetObject(String ObjectName)
   get object, input is object name
3. **_GetObjectEx (ObjectID);**
   java: StarObjectClass _GetObjectEx(String ObjectID)
   ObjectID is the ID of the object.
   Calling format : a = Service._GetObjectEx ("66efc37a-a16c-442b-bc2a-3df5b03b3294")
4. **_GetObjectEx2 (ServiceName,ObjectName);**
   java: StarObjectClass _GetObjectEx2(String ServiceName,String ObjectName)
   Get object of special service.
5. **_GetSysRootItem(SysRootItemName)**
   java: StarServiceItemClass _GetSysRootItem(String SysRootItemName)
   Get service item.If service item does not active, the returns None.
6. **_Exit ()**
   java: void _Exit()
   exit the service.
7. **_Save (Path=None)**
   java: void _Save(String Path)
   Save service
8. **_IsChange()**
   java: boolean _IsChange()
   whether the service is changed
9. **_IsActive ()**
   java: boolean _IsActive()
   whether the service isactive.
10. **_QueryFirstFromSDT()**

java: StarObjectClass _QueryFirstFromSDT()

Query first object from service table

11. **_QueryNextFromSDT()**

java: StarObjectClass _QueryNextFromSDT()

Query next object from service table

12. **_PrintInfo ()**

java: void _PrintInfo()

Print service information.

13. **Bool =_CreateSysRootItem(SysRootItemName, DependSysRootItem, SysRootItemID=None,SysRootItemIDEx=None)/SysRootItem=_CreateSysRootItemEx(SysRootItemName, DependSysRootItem,SysRootItemID=None, SysRootItemIDEx=None)**

java: boolean _CreateSysRootItem(String SysRootItemName,String DependSysRootItem,String SysRootItemID,String SysRootItemIDEx)

java: StarServiceItemClass _CreateSysRootItemEx(String SysRootItemName,String DependSysRootItem,String SysRootItemID,String SysRootItemIDEx)

Create service item,SysRootItemID is UUID string, SysRootItemIDEx is UUID string which may be ““,DependSysRootItem is the depended service item which may be ““ if not exist.

14. **_ActiveSysRootItem(SysRootItemName)**

java: void _ActiveSysRootItem(String SysRootItemName)

Activate service item, no return value.

15. **_ActiveAllSysRootItem()**

java: void _ActiveAllSysRootItem()

Activate all service items, no return value, valid at server service group.

16. **_DeactiveSysRootItem (SysRootItemName)**

java: void _DeactiveSysRootItem(String SysRootItemName)

deactivate service item, no return value.

17. **_ActiveCSysRootItem(ClientID,SysRootItemName)**

java: void _ActiveCSysRootItem(int ClientID,String SysRootItemName)

activate service item at client service group, no return value, should be called at server service group.

18. **_DeactiveCSysRootItem (ClientID,SysRootItemName)**

java: void _DeactiveCSysRootItem(int ClientID,String SysRootItemName)

deactivate service item at client side, no return value, valid at server service group.

19. **Name = _QueryFirstSysRootItem ()**

java: String _QueryFirstSysRootItem()

query first service item name

20. **Name = _QueryNextSysRootItem ()**

java: String _QueryNextSysRootItem()

query next service item name

21. **Name,ID,Continue = _QueryFirstDepend (QueryRecord)**

java: Object[] _QueryFirstDepend()

query first service depended.

22. **Name,ID,Continue =_QueryNextDepend (QueryRecord)**

java: Object[] _QueryNextDepend()

query next service depended.

23. bool =_IsOsSupport (ProgramRunType,OsType)

java: boolean _IsOsSupport(int ProgramRunType,int OsType)

Returns true if the corresponding OSType share library of modules of the service and depended service exists.

24. bool =_SetClientObject (ClientID,Object)

java: boolean _SetClientObject(int ClientID,StarObjectClass Obj)

Called at server, each client should only exist one. ClientID can not be set to 0.

25. Object =_GetClientObject()

java: StarObjectClass _GetClientObject()

Gets client object, called at client side.

26. _SetPrivateTag (ClientPrivateTag)

java: void _SetPrivateTag(int ClientPrivateTag)

Valid at client side. The tag is used for server to check the validity of remote call, global object creating, changing or deleting operations.

27. value=Service._GetOPPermission()

java: int _GetOPPermission()

Get operation permission. valid at client side.

5.6.3 client login function

1. _RegMachineFunction(Service_ClientRegisterProc);

java: void _RegMachineFunction(String FunctionName)

Valid at server service group. The callback function is registered to process client login, which format is:

```
def Service_ClientRegisterProc( self,int uMes,int ClientID,char SrcServiceID,
SrcServiceAdd,int SrcServicePort,ParaPkg,UserName,UserPassword) :

function Service:ClientRegisterProc( int uMes,int ClientID,char SrcServiceID,
SrcServiceAdd,int SrcServicePort,ParaPkg,UserName,UserPassword):

java/c#:
public void ClientRegisterProc(int uMes,int ClientID,String SrcServiceID, String
 SrcServiceAdd,int SrcServicePort,StarParaPkgClass ParaPkg, String  UserName,
 String  UserPassword)
No result needed return from the callback. If client is permit to login, then the
 callback should call _AcceptClient(ClientID,True,True). If not, should call
 _AcceptClient(ClientID,False,False). In addition, _AcceptClient may be called
 sometime after the callback function.

For Login, uMes = 1
SrcServiceAdd and SrcServicePort are source service address and port which are
 invalid other than in service redirect process.ParaPkg is login parameter.
```

For Logout, uMes = 3,
SrcServiceID,SrcServiceAdd ,SrcServicePort,ParaPkg will be set to None

For LoadServiceOk, uMes = 2,
SrcServiceID,SrcServiceAdd ,SrcServicePort,ParaPkg will be set to None

2. **_RegMachineFunction_P(CallBackProc);**
   for lua, ruby, python, this function is same as _RegMachineFunction
   java: void _RegMachineFunction_P(StarServiceMachineInterface CallBackProc)

   public interface StarServiceMachineInterface{
   public void Invoke(Object Service,int uMes,int ClientID,String SrcServiceID, String SrcServiceAdd,int SrcServicePort,Object ParaPkg, String UserName, String UserPassword);
   }
   c#: void _RegMachineFunction_P(StarServiceMachineInterface CallBackProc);

   public delegate void StarServiceMachineInterface(Object Service,int uMes, int ClientID,String SrcServiceID, String SrcServiceAdd, int SrcServicePort,Object ParaPkg, String UserName, String UserPassword);

3. **Bool =_AcceptClient (ClientID,True/False,bool ReSyncFlag,char *TermOldScript, char *InitNewScript, ClientPrivateTag ,ClientOPPermission, ClientUploadMaxSize);**
   java: boolean _AcceptClient(int ClientID,boolean Result,boolean ReSyncFlag,String TermOldScript,String InitNewScript,int ClientPrivateTag,int ClientOPPermission,int ClientUploadMaxSize)

Valid at server which is used to accept or reject client login, and is called in ClientRegisterProc function or sometime later. Login procedure is finished after the function is called.If ReSyncFlag == True, then client will be forced to resychronize for the same service, otherwise not.

TermOldScript: is the lua script called before service is load, should use carefully. If no active service exists at client side, then it will be ignored. Before running the script, CLE creates a lua global variable "_gService" which represents current service.

InitNewScript: is the lua script called before service is load Before running the script, CLE creates a lua global variable "_gService" represents current service.

TermOldScript + InitNewScript: total length should < 32Kbytes.

If is redirected from the same service, then only InitNewScript is valid.

When InitNewScript is executed, the service is not synchronized, therefore do not operate objects in the service.

ClientOPPermission takes value from list:

#define VSCLIENTOP_CREATE ((VS_ULONG)0x00000001)
#define VSCLIENTOP_DELETE ((VS_ULONG)0x00000002)
#define VSCLIENTOP_CHANGE ((VS_ULONG)0x00000004)

ClientUploadMaxSize: maximum size permitted for upload at client side, which unit is bytes. Client side uses SetStaticData to upload data.

4. **IPStr,OsType,RunType =_GetClientInfo (ClientID);**

java: Object[] _GetClientInfo(int ClientID)

Valid at server, returns client informaton

5. **_GetClientNumber ();**

java: int _GetClientNumber()

returns client number.

6. **_PrintClientInfo ();**

java: void _PrintClientInfo()

prints all clients information.

7. **_DelClient (ClientID);**

java: void _DelClient(int ClientID)

Valid at client and server. The connection will be closed after the function call.

5.6.4 object operation callback—vaid at server [object change,create or delete]

1. **_RegClientOpFunction(Service_Func);**

java: void _RegClientOpFunction(String FunctionName)

The function prototype is:

```
def Service_Func (self,Op,ClientID,ClientPrivateTag,Object,AttrIndex,ClassID) :

    return True
```

```
function Service:Func (Op,ClientID,ClientPrivateTag,Object, AttrIndex,ClassID)

    return true
end
```

```
java/c#:
public boolean OpFunction(int Op,int ClientID,int ClientPrivateTag,StarObjectClass Obj,int AttrIndex,String ClassID)
```

ClientPrivateTag: is used to determine whether the client is legal.

If the function returns False, then the operation is denied, otherwise is permitted

//---for delete Op = 0; Object is valid

//---for change Op = 1; Object is valid

//---for create Op = 2; Object is the parent object,ClassID is id of the class.

2. **_RegClientOpFunction_P(CallBackProc);**

for lua, ruby, python, this function is same as _RegClientOpFunction

for python, support decorator.

java: void _RegClientOpFunction_P(StarServiceClientOpInterface CallBackProc)

```
public interface StarServiceClientOpInterface{
    public boolean Invoke(Object Service,int Op,int ClientID,int ClientPrivateTag,Object
```

```
Obj,int AttrIndex,String ClassID);
}

c#: void _RegClientOpFunction_P(StarServiceClientOpInterface CallBackProc);

public delegate bool StarServiceClientOpInterface(Object Service,int Op,int
ClientID,int ClientPrivateTag,Object Obj,int AttrIndex,String ClassID);
```

5.6.5 service redirect

1. _Redirect (ClientID, DesServerInterface,DesServerName, DesServerPortNumber,ParaPackage, Service_ClientRedirectProc=None);

```
java: void _Redirect(int ClientID,String DesServerInterface,String DesServerName,int
DesServerPortNumber,StarParaPkgClass ParaPackage,String RedirectProcName)
```

DesServerInterface may be ““

Valid at server, direct client to connect to other server, no return value.

```
def Service_ClientRedirectProc( self,uMsg, ClientID,
DesServerName,DesServerPortNumber) :

function Service:ClientRedirectProc( uMsg, ClientID,
DesServerName,DesServerPortNumber)

java/c#:
public void ClientRedirectProc( int uMsg, int ClientID, String DesServerName,int
DesServerPortNumber)
```

uMsg = 0 : redirect succeed. Server will close the connection after the callback by cle.

uMsg = 1 : redirect failed.

call examples:

_Redirect(ClientID,DesServerName,DesServerPortNumber)

_Redirect(ClientID,DesServerName,DesServerPortNumber, ClientRedirectProc)

_Redirect(ClientID,DesServerName,DesServerPortNumber,ParaPackage, ClientRedirectProc)

2. _Redirect_P (ClientID, DesServerInterface,DesServerName, DesServerPortNumber,ParaPackage, CallBackProc);

for lua, ruby, python, this function is same as _Redirect

```
java: public void _Redirect_P(int ClientID,String DesServerInterface,String
DesServerName,int DesServerPortNumber,StarParaPkgClass
ParaPackage,StarServiceRedirectInterface CallBackProc)

public interface StarServiceRedirectInterface{
    public void Invoke(Object Service,int uMsg, int ClientID, String DesServerName,int
DesServerPortNumber);
}

c#: void _Redirect_P(int ClientID,String DesServerInterface,String
```

```
DesServerName,int DesServerPortNumber,StarParaPkgClass
ParaPackage,StarServiceRedirectInterface CallBackProc);

public delegate void StarServiceRedirectInterface(Object Service,int uMsg, int
ClientID, String DesServerName,int DesServerPortNumber);
```

5.6.6 file upload and download function

1. **_DownLoad (ServerPath,ClientPath,FileName); [reserved]**

```
java: void _DownLoad(String ServerPath,String ClientPath,String FileName)
```

Download file from server, valid at client or debug.

2. **_HttpDownLoad (ServerUrl, ClientPath,FileName);**

```
java: void _HttpDownLoad(String ServerUrl,String ClientPath,String FileName)
```

Service._HttpDownLoad("http://www.srplab.com/Files","e:","srirrlicht_index.htm")

3. **_HttpDownLoadAbort ();**

```
java: void _HttpDownLoadAbort()
```

SrvGroup: _HttpDownLoadAbort ()

Cancel all http/ftp download process.

4. **_UpLoad (ServerPath,ClientPath,FileName); [reserved]**

```
java: void _UpLoad(String ServerPath,String ClientPath,String FileName)
```

Upload file to server, valid at client or debug.

5. **long RefValue=_RegFileCallBack(Service_Function);**

```
java: long _RegFileCallBack(String FunctionName)
```

valid at client or debug. should only register one.

6. **long RefValue=_RegFileCallBack_P(CallBackProc);**

for lua, ruby, python, this function is same as _RegFileCallBack

```
java: long _RegFileCallBack_P(StarServiceFileCallBackInterface CallBackProc)

public interface StarServiceFileCallBackInterface{
    public void Invoke(Object Service,int uMsg, boolean DataFile,int
ReceiveOrSendOffset,int DataSize, Object FileName_Object, int UniqueDataUnitID,String
Version);
}

c#: int _RegFileCallBack_P(StarServiceFileCallBackInterface CallBackProc);

public delegate void StarServiceFileCallBackInterface(Object Service,int uMsg,
bool DataFile,int ReceiveOrSendOffset,int DataSize, Object FileName_Object, int
UniqueDataUnitID,String Version);
```

7. **_UnRegFileCallBack(RefValue);**

```
java: void _UnRegFileCallBack(long RefValue)
```

Callback function prototype

```
def Service_DownUpProc( self, uMsg, DataFile,ReceiveOrSendOffset,DataSize,
FileName Or Object, UniqueDataUnitID,Version )
```

```
function Service: DownUpProc( uMsg, DataFile,ReceiveOrSendOffset,DataSize,
FileName Or Object, UniqueDataUnitID,Version )
```

```
java/c#:
public void DownUpProc( int uMsg, boolean DataFile,int ReceiveOrSendOffset,int
DataSize, Object FileName_Object, int UniqueDataUnitID,String Version )
```

If DataFile = true, then variable FileName_Object is FileName
If DataFile = false, then variable FileName_Object is ID, UniqueDataUnitID represents APPID of static data, and Version represents version of static data.
uMsg takes value:
0 : start download, 1:download progress,2:finish,3:error
4 : start upload, 5:upload progress,6:finish,7:error

5.6.7 create object (base class not exist)

1. **_New/_NewEx (ObjectID,QueueAttrName,ParentObject)**

   ```
   java: StarObjectClass _New(Object...Args)
   java: StarObjectClass _NewEx(Object...Args)
   ```

   refer to Object._New
2. **_NewGlobal/_NewGlobalEx(ObjectID,ClientID, QueueAttrName,ParentObject)**

   ```
   java: StarObjectClass _NewGlobal(Object...Args)
   java: StarObjectClass _NewGlobalEx(Object...Args)
   ```

   refer to Object._NewGlobal
3. **_NewClient/_NewClientEx(ObjectID,ClientID, QueueAttrName,ParentObject)**

   ```
   java: StarObjectClass _NewClient(Object...Args)
   java: StarObjectClass _NewClientEx(Object...Args)
   ```

   refer to Object._NewClient

5.6.8 service macro definition

1. **_PrintMacro (ServiceName.MacroName);**

   ```
   java: void _PrintMacro(String ServiceName_MacroName)
   ```

   Print macro defininition. If MacroName does not exist,then print macro list of the service.

5.6.9 user management—valid at server,service object should be get with root user

1. **Bool = _CreateUser (UserName,UserPass, ReadWriteOrExecute);**

   ```
   java: boolean _CreateUser(String UserName,String UserPass,int ReadWriteOrExecute)
   ```

If user does not exist, then create new one, or else change its information.
ReadWriteOrExecute may be combination of the following values:

READ 0x01
WRITE 0x02
EXECUTE 0x04
EXPORTXML 0x08

2. **_DeleteUser(UserName);**
   java: void _DeleteUser(String UserName)
3. **UserName, ReadWriteOrExecute= _FirstUser(QueryRecord);**
   java: Object[] _FirstUser(StarQueryRecordClass QueryRecord)

QueryRecord is allocated using function ServiceGroup._NewQueryRecord

4. **UserName, ReadWriteOrExecute= _NextUser(QueryRecord);**
   java: Object[] _NextUser(StarQueryRecordClass QueryRecord)
   If user does not exist, the function returns None.

5.6.10 execute script

Note: The execution of script may be not in the same thread with the caller

1. **True/false, ErrorInfo =_RunScript(ScriptInterface,ScriptBuf,** Module**Name, WorkDirectory);**
   java: Object[] _RunScript(String ScriptInterface,String ScriptBuf,String ModuleName,String WorkDirectory)

Executes script, WorkDirectory is work directory, may be ““.
Static language does not support the function, such as java/c#.
ModuleName is name of the module, may be NULL. This Parameter is only valid for lua and python.

2. **True/false, ErrorInfo =_RunScriptEx(ScriptInterface,BinBuf,** Module**Name, WorkDirectory);**
   java: Object[] _RunScriptEx(String ScriptInterface,StarBinBufClass BinBuf,String ModuleName,String WorkDirectory)

Executes script, WorkDirectory is work directory, may be ““.
BinBuf should be allocated by _NewBinBuf.
Static language does not support this function, such as java/c#.
ModuleName is name of the module, which may be “”. This Parameter is only valid for lua and python.

3. **True/false, ErrorInfo = _DoFile(ScriptInterface,FileName, WorkDirectory)/ _DoFileEx(ScriptInterface,FileName, WorkDirectory,ModuleName);**
   java: Object[] _DoFile(String ScriptInterface,String FileName,String WorkDirectory)
   java: Object[] _DoFileEx(String ScriptInterface,String FileName,String WorkDirectory,ModuleName)

If ScriptInterface is ““, then default is lua. ScriptInterface may be lua,python,ruby,java,c# or other script language registered.
ModuleName is name of the module,may be “” or NULL. This Parameter is only valid for lua and python and java and csharp. For java and csharp, ModuleName is the init class name. For example, the ModuleName is “com.srplab.www.test”.
ModuleName should not set to “cmd”, case insensitive.

5.6.11 get peer ip address

1. **string IP =_GetPeerIP (ClientID)**

   java: String _GetPeerIP(int ClientID)

Called at client side, the input ClientID will be ignored.
Called at server side, ClientID indicates which client.

5.6.12 get server ID at client

1. **ServerID =_GetServerID()**

   java: int _GetServerID()

Valid at client side, which is used to get server ID for the communication with server.

5.6.13 force to save service static data (valid at server side)

1. **_ForceToSaveStatic ()**

   java: void _ForceToSaveStatic()

When service exits, then service static data is forced to save.

5.6.14 remove expired data

1. **_ClearStatic (Days)**

   java: void _ClearStatic(int Days)

5.6.15 static data http download callback—valid at server side

1. **_RegServerWebDownFunction (Service_Func);**

   java: void _RegServerWebDownFunction(String FuncName)

function prototype is:

```
def Service_Func (self,uMes,FileName,MaxSize,CurSize)
```

```
function Service:Func (uMes,FileName,MaxSize,CurSize)

end
```

```
java/c#:
public void Func (int uMes,String FileName,long MaxSize,long CurSize)
{}
```

uMes:

```
#define VSFILE_ONDOWNSTART          0       //---start download
#define VSFILE_ONDOWNPROGRESS       1       //---download progress
#define VSFILE_ONDOWNFINISH         2       //---finish
```

#define VSFILE_ONDOWNERROR 3 //---error

2. **_RegServerWebDownFunction_P (CallBackProc);**
   for lua, ruby, python, this function is same as _RegServerWebDownFunction

```
java: void _RegServerWebDownFunction_P(StarServiceWebDownInterface CallBackProc)

public interface StarServiceWebDownInterface{
    public void Invoke(Object Service,int uMes,String FileName,long MaxSize,long CurSize);
}

c#: void _RegServerWebDownFunction_P(StarServiceWebDownInterface CallBackProc);

public delegate void StarServiceWebDownInterface(Object Service,int uMes,String FileName,long MaxSize,long CurSize);
```

5.6.16 get object string from Lua

1. **_GetObjectFromLua(Str)**

```
java: StarObjectClass _GetObjectFromLua(String Str)
```

The format of String is as "Service.DriveClass".

5.6.17 Pack static data

1. **_PackStaticData()**

```
java: void _PackStaticData()
```

Removes redundant space of static data file.

5.6.18 Xml file

1. **bool = _XmlToSysRootItem (SXml,DataPath, SegmentName,PrintFunc=None)**

```
java: boolean _XmlToSysRootItem(StarSXmlClass SXml,String DataPath,String SegmentName,String PrintFuncName)
```

def PrintFunc(Info) :
    Print(Info)

2. **bool = _XmlToSysRootItem_P(SXml,DataPath, SegmentName,CallBackProc)**
   for lua, ruby, python, this function is same as _XmlToSysRootItem

```
java: boolean _XmlToSysRootItem_P(StarSXmlClass SXml,String DataPath,String SegmentName,StarServiceInfoInterface CallBackProc)

public interface StarServiceInfoInterface{
    public void Invoke(Object Service,String Info);
}

c#: bool _XmlToSysRootItem_P(StarSXmlClass SXml,String DataPath,String SegmentName,StarServiceInfoInterface CallBackProc);
```

```
public delegate void StarServiceInfoInterface(Object Service,String Info);
```

3. **bool = _XmlToObject (SXml,Object/SystemRootItem,QueueName,DataPath, SegmentName,PrintFunc=None)**

   java: boolean _XmlToObject(StarSXmlClass SXml,Object Obj,String QueueName,String DataPath,String SegmentName,String PrintFuncName)

4. **bool = _XmlToObject_P (SXml,Object/SystemRootItem,QueueName,DataPath, SegmentName,CallBackProc)**

   for lua, ruby, python, this function is same as _XmlToObject

   java: boolean _XmlToObject_P(StarSXmlClass SXml,Object Obj,String QueueName,String DataPath,String SegmentName,StarServiceInfoInterface CallBackProc)

   ```
   public interface StarServiceInfoInterface{
       public void Invoke(Object Service,String Info);
   }

   c#: bool _XmlToObject_P(StarSXmlClass SXml,Object Obj,String QueueName,String DataPath,String SegmentName,StarServiceInfoInterface CallBackProc);

   public delegate void StarServiceInfoInterface(Object Service,String Info);
   ```

5. **bool = _ ServiceToXml (SXml,PassWord,DataPath,bool CFunctionFlag, bool OutputObjectID ,PrintFunc=None)**

   java: boolean _ServiceToXml(StarSXmlClass SXml,String PassWord,String DataPath,boolean CFunctionFlag,boolean OutputObjectID,String PrintFuncName)

6. **bool = _ ServiceToXml_P (SXml,PassWord,DataPath,bool CFunctionFlag, bool OutputObjectID ,CallBackProc)**

   for lua, ruby, python, this function is same as _ServiceToXml

   java: boolean _ServiceToXml_P(StarSXmlClass SXml,String PassWord,String DataPath,boolean CFunctionFlag,boolean OutputObjectID,StarServiceInfoInterface CallBackProc)

   ```
   public interface StarServiceInfoInterface{
       public void Invoke(Object Service,String Info);
   }

   c#: bool _ServiceToXml_P(StarSXmlClass SXml,String PassWord,String DataPath,bool CFunctionFlag,bool OutputObjectID,StarServiceInfoInterface CallBackProc);

   public delegate void StarServiceInfoInterface(Object Service,String Info);
   ```

7. **bool = _SysRootItemToXml (SXml, SysRootItemName,DataPath, bool CFunctionFlag, bool OutputObjectID ,PrintFunc=None)**

   java: boolean _SysRootItemToXml(StarSXmlClass SXml,String SysRootItemName,String DataPath,boolean CFunctionFlag,boolean OutputObjectID,String PrintFuncName)

8. **bool = _SysRootItemToXml_P (SXml, SysRootItemName,DataPath, bool CFunctionFlag,**

bool OutputObjectID ,CallBackProc)

for lua, ruby, python, this function is same as _SysRootItemToXml

java: boolean _SysRootItemToXml_P(StarSXmlClass SXml,String SysRootItemName,String DataPath,boolean CFunctionFlag,boolean OutputObjectID,StarServiceInfoInterface CallBackProc)

```
public interface StarServiceInfoInterface{
    public void Invoke(Object Service,String Info);
}
```

```
c#: bool _SysRootItemToXml_P(StarSXmlClass SXml,String SysRootItemName,String DataPath,bool CFunctionFlag,bool OutputObjectID,StarServiceInfoInterface CallBackProc);

public delegate void StarServiceInfoInterface(Object Service,String Info);
```

9. **bool = _ObjectToXml (SXml,Object,DataPath, bool CfunctionFlag, bool OutputObjectID ,PrintFunc=None)**

java: boolean _ObjectToXml(StarSXmlClass SXml,Object Obj,String DataPath,boolean CfunctionFlag,boolean OutputObjectID,String PrintFuncName)

```
function Service:PrintFunc(Info)
end
```

```
java/c#:
public void PrintFunc(String Info)
{
}
```

10. **bool = _ObjectToXml_P (SXml,Object,DataPath, bool CfunctionFlag, bool OutputObjectID ,CallBackProc)**

for lua, ruby, python, this function is same as _ObjectToXml

java: boolean _ObjectToXml_P(StarSXmlClass SXml,Object Obj,String DataPath,boolean CfunctionFlag,boolean OutputObjectID,StarServiceInfoInterface CallBackProc)

```
public interface StarServiceInfoInterface{
    public void Invoke(Object Service,String Info);
}
```

```
c#: bool _ObjectToXml_P(StarSXmlClass SXml,Object Obj,String DataPath,bool CfunctionFlag,bool OutputObjectID,StarServiceInfoInterface CallBackProc);

public delegate void StarServiceInfoInterface(Object Service,String Info);
```

5.6.19 atomic function

1. **AtomicDepend= _CreateAtomicDepend (DependServiceName)**

java: long _CreateAtomicDepend(String DependServiceName)

2. **AtomicMacro= _CreateAtomicMacro (MacroName,MacroType)**

   java: long _CreateAtomicMacro(String MacroName,int MacroType)

   MacroType = 0Integer MacroType = 1 float MacroType = 2 string

3. **AtomicMacroItem= _CreateAtomicMacroItem (MacroObject, MacroItemName,string MacroItemValue)**

   java: long _CreateAtomicMacroItem(long MacroObject,String MacroItemName,String MacroItemValue)

4. **AtomicModule= _CreateAtomicModule (ModuleName,ModuleType,ObjectID)**

   java: long _CreateAtomicModule(String ModuleName,int ModuleType,String ObjectID)

5. **AtomicModule=_CreateAtomicEditModule (ModuleName,ObjectID)**

   java: long _CreateAtomicEditModule(String ModuleName,String ObjectID)

6. **AtomicStruct=_CreateAtomicStruct (StructName,StructCaption,ObjectID)**

   java: long _CreateAtomicStruct(String StructName,String StructCaption,String ObjectID)

7. **AtomicSysRootItem= _CreateAtomicSysRootItem (SysRootItemName,DependSysRootItem)**

   java: long _CreateAtomicSysRootItem(String SysRootItemName,String DependSysRootItem)

8. **AtomicObject=_CreateAtomicObject (ParentAtomicObject, ParentQueueName, AtomicClassObject, ObjectName,ObjectID)**

   java: long _CreateAtomicObject(long ParentAtomicObject,String ParentQueueName,long AtomicClassObject,String ObjectName,String ObjectID)

   If ParentObject is service item, then ParentQueueName may be nil.

9. **AtomicAttribute= _CreateAtomicAttachAttribute (**AtomicObject, AttributeName, Caption, int Type, int StaticID, int SyncFlag, int CreateFlag, int NotifyFlag, int EditType, int EditControl, int EditReadOnly, string Default,string Desc)

   java: long _CreateAtomicAttachAttribute(long AtomicObject,String AttributeName,String Caption,int Type,int StaticID,int SyncFlag,int CreateFlag,int NotifyFlag,int EditType,int EditControl,int EditReadOnly,String Default,String Desc)

   Attribute type supported is:

   TYPE_BOOL :
   TYPE_INT8 :
   TYPE_UINT8 :
   TYPE_INT16 :
   TYPE_UINT16 :
   TYPE_INT32 :
   TYPE_UINT32 :
   TYPE_FLOAT :
   TYPE_LONG :
   TYPE_ULONG :
   TYPE_CHAR :
   TYPE_COLOR :
   TYPE_RECT :
   TYPE_FONT :
   TYPE_TIME :

TYPE_STRUCT :

a. “SyncFlag”,TYPE_UINT8,default is 0 note: 0 global, 1 local
b. “CreateFlag”,TYPE_UINT8,default is 0 note: 0 do not need, 1 need
c. “NotifyFlag”,TYPE_UINT8,default is 0 note:1 notify before change, 2 notify after change, or both.
d. “StaticID”,TYPE_ULONG,default is 0
e. “EditType”, TYPE_UINT8,default is 0 note:0 normal edit, 1 combobox, 3 button ,4 check box, 5 can not edit, 6 mask edit
f. “EditControl”, TYPE_UINT8,default is 0 note:0 none, 1 display callback
g. “EditReadOnly”, TYPE_UINT8,default is 0 note:0can edit, 1 readonly
h. “ComboBox”,string,default is ““, or indicates the macro name.

10. AtomicAttribute= _CreateAtomicAttribute (AtomicObject, AttributeName, Caption, Type, StaticID, SyncFlag, CreateFlag, NotifyFlag, EditType, EditControl, EditReadOnly, Default,Desc)

java: long _CreateAtomicAttribute(long AtomicObject,String AttributeName,String Caption,int Type,int StaticID,int SyncFlag,int CreateFlag,int NotifyFlag,int EditType,int EditControl,int EditReadOnly,String Default,String Desc)

Attribute type supported is:

TYPE_BOOL :
TYPE_INT8 :
TYPE_UINT8 :
TYPE_INT16 :
TYPE_UINT16 :
TYPE_INT32 :
TYPE_UINT32 :
TYPE_FLOAT :
TYPE_LONG :
TYPE_ULONG :
TYPE_LONGHEX :
TYPE_ULONGHEX :
TYPE_VSTRING :
TYPE_PTR :
TYPE_STRUCT :
TYPE_CHAR :
TYPE_COLOR :
TYPE_RECT :
TYPE_FONT :
TYPE_TIME :
TYPE_UUID :
TYPE_STATICID :

11. AtomicAttribute= _CreateAtomicFuncRetAttribute (AtomicObject, int Type,Desc)

java: long _CreateAtomicFuncRetAttribute(long AtomicObject,int Type,String Desc)

Return value type supported is:

TYPE_BOOL :
TYPE_INT8 :
TYPE_UINT8 :
TYPE_INT16 :
TYPE_UINT16 :
TYPE_INT32 :
TYPE_UINT32 :
TYPE_FLOAT :
TYPE_LONG :
TYPE_ULONG :

TYPE_CHARPTR :
TYPE_PARAPKGPTR :
TYPE_PTR :
TYPE_VOID :

TYPE_INT8PTR :
TYPE_UINT8PTR :
TYPE_INT16PTR :
TYPE_UINT16PTR :
TYPE_INT32PTR :
TYPE_UINT32PTR :
TYPE_FLOATPTR :
TYPE_LONGPTR :
TYPE_ULONGPTR :
TYPE_STRUCTPTR :
TYPE_COLORPTR :
TYPE_RECTPTR :
TYPE_FONTPTR :
TYPE_TIMEPTR :
TYPE_UUIDPTR :
TYPE_OBJPTR :

12. AtomicAttribute= _CreateAtomicFuncParaAttribute (AtomicObject, AttributeName, AttributeCaption ,Type,Desc)

java: long _CreateAtomicFuncParaAttribute(long AtomicObject,String AttributeName,String AttributeCaption,int Type,String Desc)

Parameter type supported is:

TYPE_BOOL :
TYPE_INT8 :
TYPE_UINT8 :
TYPE_INT16 :
TYPE_UINT16 :

TYPE_INT32 :
TYPE_UINT32 :
TYPE_FLOAT :
TYPE_LONG :
TYPE_ULONG :
TYPE_COLOR :
TYPE_RECT :
TYPE_FONT :
TYPE_TIME :
TYPE_UUID :
TYPE_PARAPKGPTR :

TYPE_PTR :
TYPE_VOID :
TYPE_CHARPTR :

TYPE_INT8PTR :
TYPE_UINT8PTR :
TYPE_INT16PTR :
TYPE_UINT16PTR :
TYPE_INT32PTR :
TYPE_UINT32PTR :
TYPE_FLOATPTR :
TYPE_LONGPTR :
TYPE_ULONGPTR :
TYPE_STRUCTPTR :
TYPE_COLORPTR :
TYPE_RECTPTR :
TYPE_FONTPTR :
TYPE_TIMEPTR :
TYPE_UUIDPTR :
TYPE_OBJPTR :

13. **AtomicAttribute= _CreateAtomicStructAttribute (**AtomicObject, AttributeName, Caption, Type, Desc**)**

java: long _CreateAtomicStructAttribute(long AtomicObject,String AttributeName,String Caption,int Type,String Desc)

Attribute type of struct supported is:

TYPE_BOOL :
TYPE_INT8 :
TYPE_UINT8 :
TYPE_INT16 :
TYPE_UINT16 :
TYPE_INT32 :
TYPE_UINT32 :

TYPE_FLOAT :
TYPE_LONG :
TYPE_ULONG :
TYPE_CHAR :
TYPE_COLOR :
TYPE_RECT :
TYPE_FONT :
TYPE_TIME :
TYPE_UUID :
TYPE_MEMORY(Reserved) :

14. **Bool= _SetAtomicAttributeLength (AtomicObject,Length)**

java: boolean _SetAtomicAttributeLength(long AtomicObject,int Length)

used for char array.

15. **Bool= _SetAtomicAttributeStruct (AtomicObject,AtomicStruct)**

java: boolean _SetAtomicAttributeStruct(long AtomicObject,int AtomicStruct)

Set the attribute of the corresponding struct or class.

16. **Bool= _SetAtomicAttributeCombobox (AtomicObject,MacroName)**

java: boolean _SetAtomicAttributeCombobox(long AtomicObject,String MacroName)

Set attribute macro.

17. **Bool= _SetAtomicAttributeSyncFlag (AtomicObject,int SyncFlag)**

java: boolean _SetAtomicAttributeSyncFlag(long AtomicObject,int SyncFlag)

Set attribute sync : type ==0 sync attribute, ==1 local attribute.

18. **Bool= _SetAtomicObjectSyncGroup (AtomicObject,int SyncGroup)**

java: boolean _SetAtomicObjectSyncGroup(long AtomicObject,int SyncGroup)

set object syncgroup.

19. **Bool= _SetAtomicObjectAttribute (AtomicObject,SysEvent(bool), int SpecialEvent,int ActiveCmd, int SaveFlag)**

java: boolean _SetAtomicObjectAttribute(long AtomicObject,boolean SysEvent,int SpecialEvent,int ActiveCmd, int SaveFlag)

set object attribute

i. “SysEvent”, TYPE_BOOL,default is false

j. “SpecialEvent”, TYPE_UINT8,default is 0

#define VSSYSEVENT_PROCESS_TICKET 0x0001 //---10msTicket event

#define VSSYSEVENT_PROCESS_FRAMETICKET 0x0002 //---service frame pulse event.

#define VSSYSEVENT_PROCESS_IDLE 0x0004 //---program Idle event

#define VSSYSEVENT_PROCESS_APPACTIVE 0x0008

#define VSSYSEVENT_PROCESS_APPDEACTIVE 0x0010

#define VSSYSEVENT_PROCESS_SERVICEACTIVE 0x0020

#define VSSYSEVENT_PROCESS_SERVICEDEACTIVE 0x0040

k. “ActiveCmd”, TYPE_UINT8,default is 0

#define VSACTIVE_ALONE 0 //---Activated or deactivated through command.
#define VSACTIVE_FOLLOW 1 //---Activated or deactivated with parent object. If parent object is service item, then the object will be activated automaticlly
//--The following two commands is dynamic, can not be saved.
l. "SaveFlag", TYPE_UINT8, default is list below.
#define VSSTATIC_SAVE 0 //---save global and static object.
#define VSSTATIC_CLIENTSAVE 1 //---Saved at client, for client dynamic object and global dynamic object
#define VSSTATIC_NONE 2 //---do not save, local object

20. AtomicScript= _CreateAtomicScript (AtomicObject, ScriptName,ObjectID, Desc, ScriptBuf)

java: long _CreateAtomicScript(long AtomicObject,String ScriptName,String ObjectID,String Desc,String ScriptBuf)

create object's script.

21. AtomicFunction= _CreateAtomicFunction (AtomicObject, FunctionName,ObjectID, Desc, CantOvl(bool), CallBack(bool),StdCallFlag(bool), GlobalFunctionFlag(bool))

AtomicFunction,ErrorInfo= _CreateAtomicFunctionEx (AtomicObject, FunctionName,ObjectID, Desc, CantOvl(bool), CallBack(bool),Type(int) ,StdCallFlag(bool), GlobalFunctionFlag(bool))

java: long _CreateAtomicFunction(long AtomicObject,String FunctionName,String ObjectID,String Desc,boolean CantOvl,boolean CallBack,boolean StdCallFlag,boolean GlobalFunctionFlag)
java: Object[] _CreateAtomicFunctionEx(long AtomicObject,String FunctionName,String ObjectID,String Desc,boolean CantOvl,boolean CallBack,String Type,boolean StdCallFlag,boolean GlobalFunctionFlag)

create object's funciton
Type is functipn prototype. For example: "VS_CHAR *GetBackImg(VS_INT32 IndexX,VS_INT32 IndexY)"

22. AtomicFunction= _CreateAtomicLuaFunction(AtomicObject, LuaFunctionName,ObjectID, Desc)

java: long _CreateAtomicLuaFunction(long AtomicObject,String LuaFunctionName,String ObjectID,String Desc)

create lua function

23. AtomicFunction= _CreateAtomicOvlFunction (AtomicObject, FunctionName, OriginFunctionName,ObjectID, Desc, CantOvl(bool))

java: long _CreateAtomicOvlFunction(long AtomicObject,String FunctionName,String OriginFunctionName,String ObjectID,String Desc,boolean CantOvl)

create object's overloading function,OriginFunctionName is the function defined in parent class.

24. AtomicInEvent= _CreateAtomicInEvent (AtomicObject, InEventName**,ObjectID** , OutEventName**)**

java: long _CreateAtomicInEvent(long AtomicObject,String InEventName,String ObjectID,String OutEventName)

create object's event,OutEventName is the output event defined in parent class

25. **AtomicOutEvent= _CreateAtomicOutEvent (AtomicObject, OutEventName,ObjectID, Desc, DynamicFlag(bool))**

java: long _CreateAtomicOutEvent(long AtomicObject,String OutEventName,String ObjectID,String Desc,boolean DynamicFlag)

create object's output event

26. **AtomicSysRootItem= _GetAtomicSysRootItem(SysRootItemName)**

java: long _GetAtomicSysRootItem(String SysRootItemName)

gets service item atomic object.

27. **AtomicObject= _GetAtomicObjectEx (ParentAtomicObject, ObjectName)**

java: long _GetAtomicObjectEx(long ParentAtomicObject,String ObjectName)

gest atomic object

28. **ID= _GetAtomicID (AtomicObject)**

java: String _GetAtomicID(long AtomicObject)

gets ID of atomic object

29. **AtomicObject= _ObjectToAtomic (Object)**

java: long _ObjectToAtomic(StarObjectClass Obj)

Converts normal object to atomic object

30. **Object= _AtomicToObject(AtomicObject)**

java: StarObjectClass _AtomicToObject(long AtomicObject)

Converts atomic object to normal object

31. **Create simple object, struct, object attribute and function**

AtomicObject,ErrorInfo = _CreateAtomicObjectSimple(SysRootItemName,ObjectName,Attribute**,ObjectID**)

java: Object[] _CreateAtomicObjectSimple(String SysRootItemName,String ObjectName,String Attribute,String ObjectID)

If SysRootItemName does not exist, then create a new one.

Attribute is string of the attribute, such as "VS_CHAR aaa;VS_INT32 bbb;" it may be set to nil; Local attribute should add prefix "local", such as "local VS_CHAR aaa;VS_INT32 bbb;"

AtomicStruct,ErrorInfo = _CreateAtomicStructSimple(StructName,Attribute**,ObjectID**)

java: Object[] _CreateAtomicStructSimple(String StructName,String Attribute,String ObjectID)

Attribute is string of the attribute, such as "VS_CHAR aaa;VS_INT32 bbb;"

AtomicObject,ErrorInfo = _CreateAtomicObjectAttributeSimple(AtomicObject,Attribut)

java: Object[] _CreateAtomicObjectAttributeSimple(long AtomicObject,String Attribut)

Attribute is string of the attribute, such as "VS_CHAR aaa;VS_INT32 bbb;" Local attribute should add prefix "local", such as "local VS_CHAR aaa;VS_INT32 bbb;"

AtomicFunction,ErrorInfo = _CreateAtomicFunctionSimple(AtomicObject,FunctionName,Attribute**,ObjectID,StdCallFlag(bool),GlobalFunctionFlag(bool)**)

java: Object[] _CreateAtomicFunctionSimple(long AtomicObject,String FunctionName,String Attribute,String ObjectID,boolean StdCallFlag,boolean GlobalFunctionFlag)

Attribute is the function prototype. For example: "VS_CHAR *GetBackImg(VS_INT32 IndexX,VS_INT32 IndexY)"

Attribute may be signature. Details refer to ScriptCall function of c++ interface.
For example:
Atribute: “VS_INT32;VS_FLOAT;” may be use string “if”
Atribute: “VS_INT32 Func(VS_FLOAT)” may be use string “(f)i”

32. attach sharelib

bool = _AtomicAttach(long atomicobject, ShareLibName)
java: boolean _AtomicAttach(long AtomicObject,String ShareLibName)
The function should be called after all function definition has been created.
_AtomicAttach(atomicobject,”user32.dll”);

5.6.20 output service header and skeleton file

1. bool,errorInfo= _ExportModule (XmlCfgFile)
java: Object[] _ExportModule(String XmlCfgFile)

The format of XmlCfgFile is as follow:

```
<?xml version="1.0" standalone="no" encoding="utf-8" ?>
<ExportModuleInfo  ExportModuleDir=D:\Work\VS_NEW\Examples>
  <SRPFSEngineBasicBCEditModule>
      <DriveClass/>
  </SRPFSEngineBasicBCEditModule>
  <SRPFSEngineBCModule>
      <FileToolClass/>
  </SRPFSEngineBCModule>
  <SRPFSEngineBasicModule>
      <DriveClass/>
      <DirectoryClass/>
      <FileClass/>
  </SRPFSEngineBasicModule>
</ExportModuleInfo>
```

5.6.21 object’s EditLog/CheckPoint[Reserved]

With the checkpoint mechanism to provide high reliability.

1. _SetLog (Object/SysRootItem,true/false)
java: void _SetLog(Object Arg,boolean BeginOrEnd)
Set the object or service item to start to log, then any changes of object attribute, child object created or deleted, child object attribute change will be recorded in log file, which can be recover

by ApplyLog.

2. **_SetLogFile(FileName)**

   java: void _SetLogFile(String FileName)

Set Log file name which default path is service directory.

3. **FileName =_GetLogFile()**

   java: String _GetLogFile()

Get log file name.

4. **_ClearLog()**

   java: void _ClearLog()

Clear Log content.

5. **bool =_ApplyLog()**

   java: boolean _ApplyLog()

Recover.

5.6.22 Authorize

1. **bool= _IsServiceRegistered ()**

   java: boolean _IsServiceRegistered()

   Whether service is registered. Do not call the function frequently.

2. **void= _CheckPassword(true/false)**

   java: boolean _CheckPassword(boolean Flag)

   If check password is set to false, then when _GetService of ServiceGroupObject is called, the cle will not check user password.

   Default is false.

5.6.23 ShareLibary functions

1. **String _FisrtShareLib()**

   return first share library name loaded.

2. **String _NextShareLib()**

   return first share library name loaded.

3. **long _GetShareLib(String ShareLibName)**

   return handle of share library.

4. **void _FreeShareLib(long ShareLibHandle)**

   free share library loaded before.

5.6.24 Object Group Management

1. **int _NewGroup()**

   Create an object group

2. **void _FreeGroup(GroupID)**

   java: void _FreeGroup(int GroupID)

   Delete an object group

3. **int _GroupAdd(GroupID,object)**
   java: int _GroupAdd(int GroupID,StarObjectClass object)
   Add an object to group, the return value is RefID;
4. **object _GroupGet (GroupID,RefID)**
   java: StarObjectClass _GroupGet(int GroupID,int RefID)
   Get object in the group by RefID;
5. **void _GroupRemove(GroupID,RefID)**
   java: void _GroupRemove(int GroupID,int RefID)
   Remove object from group
6. **void _GroupRemoveEx(GroupID,object)**
   java: void _GroupRemoveEx(int GroupID,StarObjectClass object)
   Remove object from group
7. **void _GroupClear(GroupID,FreeObjectFlag)**
   java: void _GroupClear(int GroupID,boolean FreeObject)
   Clear the group, if FreeObject == true, then objects in the group will be freed.

5.6.25 Get Control Service

1. **Service = _ GetControlService()**
   java: StarServiceClass _GetControlService()

This function may be return nil/None,null;

5.6.26 Raw Object Interface

1. **boolean _LoadRawModule(String ScriptInterface,String ModuleName,String FileOrString,boolean IsString)**

The function is same as the one in ServiceGroupClass.

2. **boolean _LoadRawModuleEx(String ScriptInterface,String ModuleName,StarObjectClass object)**

This function is valid for csharp, object should be raw assembly object.

3. **Object _NewScriptRawType(int RawType)**

The function is reserved.

4. **StarObjectClass _NewRawProxy(String ScriptInterface,Object AttachObject,String AttachFunction,String ProyInfo,int ProxyType)**

AttachObject: is cle object or instance of script class, which contains functions callback from the proxy.

AttachFunction: is callback function name

ProyInfo : proxy info, varies with script interface

ProxyType : 1, the callback function run in main thread, which inits CLE. Others are reserved, set to 0;

for c/c++ :

The function is invalid.

for lua :

The function returns a callable lua userdata, which can be called from lua script.

ProyInfo: will be ignored

AttachObject may be input lua function for c# delegate,or function table for java interface. In this case, AttachFunction will be ignored. For example:

```
close_cb = {       }
function close_cb.windowClosing(ev)
      print("close")
      frame:setVisible(false)
      frame:dispose()
end

function close_cb.windowActivated(ev)
      print("act")
end
jproxy = Service:_NewRawProxy("java",close_cb,"","java.awt.event.WindowListener",0);
```

or

```
exit_cb = {
actionPerformed = function(ev)
      print("exit")
      frame:setVisible(false)
      frame:dispose()
end
}
jproxyb = Service:_NewRawProxy("java",exit_cb,"","java.awt.event.ActionListener",0);
```

for python :

The function returns a callable python object. which can be called from python script.

ProyInfo: will be ignored

AttachObject may be python function, in this case, AttachFunction will be ignored.

for ruby :

The function returns a method. which can be called from ruby script.

ProyInfo: will be ignored

AttachObject may be ruby function, in this case, AttachFunction will be ignored.

for java :

The function returns a proxy of java interface.

ProyInfo: java interfaces, separated with ‘,’
AttachFunction will be ignored

for csharp :
The function returns a proxy of c# delegate.
ProyInfo: c# delegate name
note : for wp8, only delegates : void XXX(object arg) and void XXX(object arg1,object arg2) are supported

5. String _CreateRawProxyCode(String ScriptInterface,String NewPackageName,String Imports,String NewClassName,String BaseClass,String Methods,String Interface)

This function is used to create code of extend class, valid for java and c#.
for java :
NewPackageName : is package name
Imports : are libraries to be import, separated by “,” , may be NULL
NewClassName : new class name to be created
BaseClass : name of base class, may be NULL
Methods : public methods to be override, may be NULL
Interface : name of interfaces, separated by “,”, may be NULL

for example:
code =
Service:_CreateRawProxyCode("java","","testextend.*","ExtendBaseClass","testextend/BaseClass","getstr,getmyclass,getstres,getmyclasses,getmyobjectes,getmyobject","testextend/ICallBack");

for csharp :
NewPackageName : is namespace
Imports : is libraries to be import, separated by “,” , may be NULL
NewClassName : new class name to be created
BaseClass : name of base class,, may be NULL
Methods : public methods to be override, may be NULL
Interface : name of interfaces, separated by “,”, may be NULL

for example:
code =
Service:_CreateRawProxyCode("csharp","","testextend","ExtendBaseClass","testextend.BaseClass","getstr,getmyclass,getstres,getmyclasses,getmyobjectes,getmyobject","testextend.ICallBack");

for python/ruby :
NewPackageName : will be ignored
Imports : is libraries to be import, separated by “,” , may be NULL
NewClassName : new class name to be created
BaseClass : name of base class,

Methods : methods to be override, should use fullname with parameter and seperatedby ';'
Interface : will be ignored

for example:
code = service._CreateRawProxyCode("python","","","ExtendBaseClass","BaseClass","__init__(self);getstr(self,val)","");

6. StarObjectClass _ImportRawContext(String ScriptInterface,String ContextName,boolean IsClass,String ContextInfo)

The function is the combination of two functions :
Obj = Service._New()
Obj._AttachRawContext(ScriptInterface,ContextName,IsClass,ContextInfo)

7. StarObjectClass _ImportRawObject(Object RawObject,boolean IsClass)

If the rawobject has been imported, then the function returns old cle object. Otherwise,The function alloc a new cle object, and assign raw object to it. In this case, it is the combination of two functions :
Obj = Service._New()
Obj._AttachRawObject(RawObject,IsClass)

5.6.27 Get Last Error

1. int _GetLastError()

2. String _GetLastErrorInfo()

5.6.28 Attribute Get

1. value = _Get (Name)

5.6.29 Get current all objects[v3.1.0]

1. Parapkg = _AllObject()

```
java: StarParaPkgClass _AllObject()
```

5.7 Service item object

5.7.1 Attribute

2. SrvItem._Name

Service item name

3. **SrvItem._Service**
   The corresponding service of the service item

5.7.2 Funcion

1. **BOOL=_IsSync () [valid at client]**
   java: boolean _IsSync()
   Whether service item is sync.
2. **BOOL=_WaitSync () [valid at client]**
   java: boolean _WaitSync()
   Waiting service item becomes sync. Return False indicates failed, and True indicates success.
3. **int _GetGroupSyncStatus(GroupIndex)**
   java: int _GetGroupSyncStatus(int GroupIndex)
   Get syncgroup status.
4. Active set table=**_GetActiveSet ()**
   java: Object[] _GetActiveSet()
   Get active set of servie item. Return None for not existing.
5. **_SetActiveSet (**active set**)**
   java: void _SetActiveSet(Object...Arg)
   Set service item active set.
6. **_SetClientActiveSet (ClientID,** active set**)**
   java: void _SetClientActiveSet(int ClientID,Object...Arg)
   Set active set of service item for client side. If the service item is not active at client, then it will be activated automaticly.
   ClientID can be obtained from Object._ClientID.
7. **_QueryFirstGroupObject(GroupIndex)**
   java: StarObjectClass _QueryFirstGroupObject(int GroupIndex)
   Get first object in the special group of the service item
   GroupIndex should not be set to zero;
8. **_QueryNextGroupObject()**
   java: StarObjectClass _QueryNextGroupObject()
   Get next object in the special group of the service item

5.7.3 Attribute Get or Set

1. **value = _Get (Name)**
2. **_Set (Name,value)**
   Name should be "_OnClientToSync"

5.7.4 Callback funcion

1. **_OnClientToSync(ClientID,SyncGroupIndex)**
   When client becomes sync, the callback function will be called at server side.

```
def SrvItem_OnClientToSync( self,ClientID,SyncGroupIndex ) :
```

```
SrvItem._OnClientToSync = SrvItem_OnClientToSync

function SrvItem:_OnClientToSync( ClientID,SyncGroupIndex )

end
```

```
java/c#:
public void _OnClientToSync(int ClientID,int SyncGroupIndex )
{
}
```

2. **_RegClientToSync(CallBack)**

```
java: void _RegClientToSync(String FunctionName)
```

3. **_RegClientToSync_P(CallBack)**

for lua, ruby, python, this function is same as _RegClientToSync

```
java: void _RegClientToSync_P(StarServiceItemClientToSyncInterface CallBackProc)

public interface StarServiceItemClientToSyncInterface{
      public void Invoke(Object ServiceItem,int ClientID,int SyncGroupIndex);
}

c#: void _RegClientToSync_P(StarServiceItemClientToSyncInterface CallBackProc);

public delegate void StarServiceItemClientToSyncInterface(Object ServiceItem,int
ClientID,int SyncGroupIndex);
```

5.8 Object's predefined attribute and function

Object's Attribute

1. **Object._Service**
   The corresponding service of the object
2. **Object._Parent**
   Parent object may be service item object, which can be distinguished by function SrvGroup._IsObject.If the function returns True, then it is normal object, or else is service item object
3. **Object._Index**
   Get queue attribute name of parent object, which the object belongs to
4. **Object._Order**
   Get order of the object in queue of parent object. Returns 0 for no order. Order starts from 1.
5. **Object._Class**
   Get class of the object
6. **Object._ThisService**
   Is the object of this service**[Returns True is this service,False other service]**

7. **Object._ActiveService**
   Is the object of active service**[Returns True is True active service,False, not active service]**
8. **Object._ClassID**
   Get class ID of the object, is string.
9. **Object._ID**
   Get object ID,is string.
10. **Object._Next**
    Get next object in the same queue of the parent
11. **Object._Prev**
    Get previous object in the same queue of the parent
12. **Object._NextEx**
    Get next object with same name
13. **Object._PrevEx**
    Get previous object with same name.
14. **Object._Name**
    object name[read and write]
15. **Object._ClientID**
    Object's ClientID(the value represents client machine ID at server side)
16. **Object._SysRootItem**
    The service item of the object belongs to
17. **Object._SyncStatus**
    Object's sync status
18. **Object._SyncGroup**
    Object syncgroup, can be read or write
    For write:
    For global dynamic object, static object, or client dynamic object, the function is only valid at server. Object's syncgroup starts from 1.
    Object must belong to one service item, otherwise the function takes no effect.
    If parent object syncgroup has been set, then child object syncgroup can not be set , which is to avoid sync problem if they are different.
19. **Bool = Object._IsLocalControl**
    Return True if object is under local control, otherwise is under server control.
    For static object, global dynamic object or client object, the function returns True at server side.
20. **Bool = Object._IsRemoteCreate**
    If returns true, then the object is created by local side, or else is created by remote side.
21. **Bool = Object. _IDInParent[read or write]**
    Object tag in parent object, 0 is reserved.
22. **Object._Layer**
    Object layer of class, start from 1. If the layer is 1, then the object has no parent class.
23. **Object._RemoteID**
    Client ID of remotecall, valid at server. The value is set when client starts remotecall. The remotecall function can use this value to determine which client initiates the remotecall.
24. **Object._RemoteSourceTag**

Source tag, is used to determine the source type.

25. **Object._RemotePrivateTag**

Client private tag, which is used to determine the legality of the client.

26. **Object._RemoteCallID**

Remotecall ID, which identify a remotecall.

27. **Bool = Object._IsRemoteCall**

Whether object is in remotecall process.

28. **Bool = Object. _RemoteCallName**

Remotecall function name, used in response.

29. **Object._AllocType**

Object alloc type

30. **Object._SaveFlag**

can be read or write. Takes value from 0,1,2, corresponding to

SAVE_NONE

SAVE_LOCAL

SAVE_GLOBAL

31. **Object._EditMode**

Can be read or write, the value is True or False, the value should be set when the object is edited.

32. **Object._WebServiceFlag**

The object is published for webservice. Returns true indicates published [read or write]

33. **Object._Super**

Only Used for call function of super class

The _Super can be used to call class functions with same name, for example,

```
class Multiply :
    def __init__(self,x,y) :
        self.a = x
        self.b = y

    def multiply(self,a,b):
        print("multiply....",self,a,b)
        return a * b

Multiply = Service:_ImportRawContext("python","Multiply",true,nil);
multiply = Multiply:_New("","",33,44);

multiply_a = multiply:_New()
function multiply_a:multiply(a,b)
    return self._Super:multiply(a,b) + 20000
end
```

34. bool Object._ReturnRawFlag[r/w][Reserved for v3.0.0]

_ReturnRawFlag is valid for raw object which wraps lua and python and ruby object. In normal case, lua table and python tuple and ruby array is tried to be converted to parapkg. But if ReturnRawFlag == true, then, lua table and python tuple and ruby array will be wrapped with CLE object.

Object's Function

5.8.1 _V/_F

1. **_V/_F()**
   print object attributes or lua functions
   For Java/c#, should use _V/_F(null).

2. **_V/_F (FuncName)**
   java: void _V(String Name)
   java: void _F(String Name)
   print description information of attribute or lua function

5.8.2 _E

_E ()
java: void _E()
print output event name and attribute.

5.8.3 _S

_S()/_S(ScriptName)
java: void _S(String Name)
print script list or script contents

5.8.4 _NV

_NV()
java: void _NV()
print object's name value paires.

5.8.5 _GetChild

_GetChild (ObjectName)
java: StarObjectClass _GetChild(String Name)
Get child object

5.8.6 _GetChildByID

_GetChildByID (AttributeName,int IDInParent)

java: StarObjectClass _GetChildByID(String AttributeName,int IDInParent)

Get child object based on IDInParent from special queue.

5.8.7 _FirstInst

_FirstInst (QueryRecord)

java: StarObjectClass _FirstInst(StarQueryRecordClass QueryRecord)

get first instance.

5.8.8 _NextInst

_NextInst (QueryRecord)

java: StarObjectClass _NextInst(StarQueryRecordClass QueryRecord)

get next instance

5.8.9 _QueryClose

_QueryClose (QueryRecord)

java: void _QueryClose(StarQueryRecordClass QueryRecord)

close query.

5.8.10 _FirstActiveChild

Child,long Context =_FirstActiveChild ()

java: Object[] _FirstActiveChild()

get first active child.

5.8.11 _NextActiveChild

Child, int Context =_NextActiveChild (long Context)

java: Object[] _NextActiveChild(long Context)

get next active child.

5.8.12 _IsInActiveSet

bool = _IsInActiveSet ()

java: boolean _IsInActiveSet()

Whether object is in active set of it's service item.

5.8.13 _IsInst

bool=_IsInst (Object)

java: boolean _IsInst(StarObjectClass Obj)

Input object is instance of the object or not.

5.8.14 _IsDirectInst

bool=_IsDirectInst (Object)

java: boolean _IsDirectInst(StarObjectClass Obj)

Input object is direct instance of the object or not.

5.8.15 _IsChild

bool=_IsChild (Object)

java: boolean _IsChild(StarObjectClass Obj)

Input object is child of the object.

5.8.16 _IsThisClient

bool=_IsThisClient ()

java: boolean _IsThisClient()

Object belongs to this client or not, valid at client side.

5.8.17 _SetPrivateValue

_SetPrivateValue (int ClassLayer,int Index,Value)

java: void _SetPrivateValue(int ClassLayer,int Index,Object Value)

Set object private value

Note : Value is int for 32 bit version, and int64 for 64 bit version

5.8.18 _GetPrivateValue

Value =_GetPrivateValue (ClassLayer,Index)

java: Object _GetPrivateValue(int ClassLayer,int Index)

Get object private value

Note : Value is int for 32 bit version, and int64 for 64 bit version

5.8.19 _InsertToSDT

_InsertToSDT ( )

java: void _InsertToSDT( )

Insert object to service table

5.8.20 _DelFromSDT

_DelFromSDT( )

java: void _DelFromSDT( )

Delete object from service table.

5.8.21 _QueryFirstInstFromSDT

Object = _QueryFirstInstFromSDT (QueryRecord)

java: StarObjectClass _QueryFirstInstFromSDT(**QueryRecord**)

Query first instance of object from service table.

5.8.22 _QueryNextInstFromSDT

Object = _QueryNextInstFromSDT (QueryRecord)

java: StarObjectClass _QueryNextInstFromSDT(**QueryRecord**)

Query next instance of object from service table.

5.8.23 _ChangeParent

_ChangeParent (ParentObject,QueueAttrName)

java: void _ChangeParent(StarObjectClass ParentObject,String QueueAttrName)

Change parent object. **ParentObject may be object or service item. If it is service item, then QueueAttrName may be omitted.**

Calling format:

Object:_ChangeParent (ParentObject)

Object:_ChangeParent (ParentObject, "QueueAttrName");

For global static,dynamic, or client object, the function is invalid at debug server side.

When change parent object, the object status will be reset. If object is active then the following event will be generated:

ONDEACTIVATING,ONDEACTIVATE,ONDESTORY,ONCREATE,ONACTIVATING,ONACTIVATE.

5.8.24 _ActiveCmd

bool=_ActiveCmd (int Cmd)

java: boolean _ActiveCmd(int Cmd)

Called at server, return value is bool type.

5.8.25 _GetActiveCmd

Cmd =_GetActiveCmd ()

java: int _GetActiveCmd()

Called at server, return object's active command

5.8.26 _ActiveClient

bool=_ActiveClient(int ClientID)

java: boolean _ActiveClient(int ClientID)

Called at server, active object at client

If ClientID equals to 0, then object is activated on all client.

5.8.27 _DeactiveClient

_DeactiveClient (int ClientID)

java: void _DeactiveClient(int ClientID)

Called at server, deactive object at client,no return value.

If ClientID equals to 0, then the object is deactivated on all client.

_Active

5.8.28 _Active ( )

java: boolean _Active( )

activate object,no return value.

_Deactive

5.8.29 _Deactive ( )

java: void _Deactive( )

deactivate object,no return value.

5.8.30 _IsActive

Bool =_IsActive ()

java: boolean _IsActive()

whether object is active.

5.8.31 _QueryFirstActiveInst

Object=_QueryFirstActiveInst (QueryRecord)

java: StarObjectClass _QueryFirstActiveInst()

get first active instance of object from current active service.

5.8.32 _QueryNextActiveInst

Object=_QueryNextActiveInst (QueryRecord)

java: StarObjectClass _QueryNextActiveInst()

get next active instance of object from current active service.

5.8.33 _RegEventFunction

long RefValue = _RegEventFunction(InObject,EventName, Object_Function)

java: long _RegEventFunction(StarObjectClass InObject,String EventName,String Object_Function)

Register object's event process function, Function Object_Function processes InObject.EventName event.

```
def Object_Function ( self,Event,Args…) :
        Print(self, Event )
        return True,… (…values)
```

```
function Object:Function ( Event,Args…)
        print(self, Event )
        return true,… (…values)
end
```

```
java/c#:
      public Object[] _OnObjectEvent(StarObjectClass self, Hashtable Event, Args)
      {
       return null; or Object[]{true,…};
      }
```

Parameter event contains four values :_SrcObject,_DesObject,_EventID, _ServiceGroupID. Args depends on event definition of the object.

5.8.34 _RegEventFunction_P

long RefValue = _RegEventFunction_P(InObject,EventName, CallBackProc)

for lua, ruby, python, this function is same as _RegEventFunction

java: long _RegEventFunction_P(StarObjectClass InObject,String EventName,StarObjectEventProcInterface CallBackProc)

```
public interface StarObjectEventProcInterface{
      public Object[] Invoke(Object CleObject,Object CleEvent,Object[] EventParas);
}
```

c#: long _RegEventFunction_P(StarObjectClass InObject,String EventName,StarObjectEventProcInterface CallBackProc);

```
public delegate object[] StarObjectEventProcInterface(Object CleObject,Object CleEvent,object[] EventParas);
```

5.8.35 _UnRegEventFunction

_UnRegEventFunction(InObject,EventName, long RefValue)

java: void _UnRegEventFunction(StarObjectClass InObject,String EventName, long RefValue)

Unregister object event process function.

5.8.36 _ProcessEvent

ReturnValue = _ProcessEvent(EventName,…)

java: Object[] _ProcessEvent(String EventName,Object...Args)

Create object event,…is args.

Types of argments and return value may be string, integer,bool,or float.

5.8.37 _PostProcessEvent

_PostProcessEvent(EventName,…)

java: void _PostProcessEvent(String EventName,Object...Args)

Create object event,…is args, no return value.

Types of argments may be string, integer,bool,or float.

5.8.38 _EventID

string EventID =_EventID(EventName)

java: String _EventID(String EventName)

Get ID of the event.

5.8.39 _SetTimer

TimerID=_SetTimer (Ticket, Object. Func, Arg1, Arg2)

java: int _SetTimer(int Ticket,String Object_Func,int Arg1,int Arg2)

Function should be defined within the object

Ticket is interval which unit is 10ms;

Calling format : a = Object.SetTimer(100,Func, 0,0)

Args should be number, returns TimerID

```
def Object_Func(self,TimerID,Arg1,Arg2) :
```

```
function Object:Func(TimerID,Arg1,Arg2)

end
```

java/c#:

```
public void TimerFunc(StarObjectClass self,int TimerID,int Arg1,int Arg2)
{
}
```

5.8.40 _SetTimer_P

TimerID=_SetTimer_P (Ticket, Arg1, Arg2,CallBackProc)

for lua, ruby, python, this function is same as _SetTimer

```
java: int _SetTimer_P(int Ticket,int Arg1,int Arg2, StarObjectTimerInterface CallBackProc )

public interface StarObjectTimerInterface{
      public void Invoke(Object CleObject,int TimerID,int Arg1,int Arg2);
}

c#: int _SetTimer_P(int Ticket,int Arg1,int Arg2, StarObjectTimerInterface CallBackProc );

public delegate void StarObjectTimerInterface(Object CleObject,int TimerID,int
Arg1,int Arg2);
```

5.8.41 _KillTimer

_KillTimer (TimerID)

```
java: void _KillTimer(int TimerID)
```

TimerID is the ID of the timer.

5.8.42 _New/_NewEx

_New(QueueAttrName,ParentObject, ObjectName,InitScript)/_NewEx (ObjectID,QueueAttrName,ParentObject, ObjectName,InitScript)

```
java: StarObjectClass _New(Object...Args)
java: StarObjectClass _NewEx(Object...Args)
```

ParentObject is parent object,QueueAttrName is queue name of the parent object. ParentObject may be object or servie item. If it is service item, then QueueAttrName may be ““.

Calling format:

Object._New(“QueueAttrName”,ParentObject)

Object._New(ParentObject)

Object._New() : no parent object

If there is no parent object, then the object is created under context of the active service. If the active service is changed, then the object will be freed by CLE.

InitSctipt is lua script used to assign attribute or perform object’s function. Each sentence is seperated by ’;’.

For example :Object._New(““,”attr1=value; attr2=value2; func();”)

’;’ should not be omitted.

syntax format:

sentences are seperated by ’;’

for each sentence,

If the first char is’$’, then the following ’$O’ will be replaced by Object before executed.

For example:”$$O:_Active();” is translated to Object:_Active() .

If not, then the following rule takes effect.

If contains ’=’, then translate to Object. XXXX

otherwise translate to Object: XXXX

$O is not case sensitive.

5.8.43 _NewGlobal/_NewGlobalEx

_NewGlobal(ClientID, QueueAttrName,ParentObject, ObjectName,InitScript)/_NewGlobalEx(ObjectID,ClientID, QueueAttrName,ParentObject, ObjectName,InitScript)

```
java: StarObjectClass _NewGlobal(Object...Args)
java: StarObjectClass _NewGlobalEx(Object...Args)
```

ParentObject is parent object, QueueAttrName is queue name of parent object. ClientID is ID of the client. ClientID should be set to 0 at client side and set to ID of client at server side. If the object is not created for special client, Client ID should also be set to 0. ParentObject may be object or servie item. If it is service item, then QueueAttrName may be ““.

ClientID may be omitted.

Calling format:

Object._NewGlobal(“QueueAttrName”,ParentObject)

Object._NewGlobal(ParentObject)

Object._NewGlobal(ClientID,”QueueAttrName”,ParentObject)

Object._NewGlobal(ClientID,ParentObject)

The function is invalid at debug.

InitSctipt is lua script used to assign attribute or perform object’function. Each sentence is seperated by ’;’.

For example :Object._New(““,”attr1=value; attr2=value2; func();”)

’;’ should not be omitted.

syntax format:

sentences are seperated by ’;’

for each sentence,

If the first char is’$’, then the following ’$O’ will be replaced by Object before executed.

For example:”$$O:_Active();” is translated to Object:_Active() .

If not, then the following rule takes effect.

If contains ’=’, then translate to Object. XXXX

otherwise translate to Object: XXXX

$O is not case sensitive.

5.8.44 _NewClient/_NewClientEx

_NewClient(ClientID, QueueAttrName,ParentObject, ObjectName,InitScript))/_NewClientEx(ObjectID,ClientID, QueueAttrName,ParentObject, ObjectName,InitScript)

```
java: StarObjectClass _NewClient(Object...Args)
java: StarObjectClass _NewClientEx(Object...Args)
```

ParentObject is parent object, QueueAttrName is queue name of parent object. ClientID is the ID of the client. ClientID should be set to 0 at client side and set to ID of client at server side. ParentObject may be object or service item. If it is service item, then QueueAttrName

may be ““.
ClientID may be omitted.
Calling format:
Object._NewClient(“QueueAttrName”,ParentObject)
Object._NewClient (ParentObject)
Object._NewClient (ClientID,”QueueAttrName”,ParentObject)
Object._NewClient (ClientID,ParentObject)
The function is invalid at debug.

InitSctipt is lua script used to assign attribute or perform object’function. Each sentence is seperated by ’;’.
For example :Object._New(““,”attr1=value; attr2=value2; func();”)
’;’ should not be omitted.
syntax format:
sentences are seperated by ’;’
for each sentence,
If the first char is’$’, then the following ’$O’ will be replaced by Object before executed.
For example:”$$O:_Active();” is translated to Object:_Active() .
If not, then the following rule takes effect.
If contains ’=’, then translate to Object. XXXX
otherwise translate to Object: XXXX
$O is not case sensitive.

5.8.45 _Change

_Change(“AttrName”,…)

java: void _Change(String AttrName,Object Arg)

Chane object attribute at local

5.8.46 _MarkChange

_MarkChange(“AttrName”)

java: void _MarkChange(String AttrName)

For attribute change, it will be synchonized to client at next service frame. [for global object, static object, and client object],valid at server.

5.8.47 _WaitMalloc

bool = _WaitMalloc()

java: boolean _WaitMalloc()

Called at client side to wait server to confirm the allocation of global or client object. If the return value is false, then the object is not permitted by server and has been freed or the connection to server is closed.

5.8.48 _Copy

_Copy(SrcObject)

java: void _Copy(StarObjectClass SrcObject)

The function does not copy pointer and local attribute.

The two objects should belong to the same class.

5.8.49 _Free

_Free()

java: void _Free()

Free object. For global, static or client object, the function is invalid at debug server side.

At client side, the object is not freed intermidately because the request will be sent to server.

The script object must not be used after the function is called.

5.8.50 _Dispose

_Dispose()

java: void _Dispose()

This function clears the script context. If the object is created by other scripts, this function does not free the object. This function is for speed up the gc procedures.

The script object must not be used after the function is called.

5.8.51 _DeferFree

_DeferFree()

java: void _DeferFree()

Free object. For global, static or client object, the function is invalid at debug.

The object is freed at next Ticket. At client side, it is same as FreeObject.

5.8.52 _IsInFree

Bool=_IsInFree()

java: boolean _IsInFree()

Returns True if object is being freed.

5.8.53 _RegFileCallBack

long RefValue =_RegFileCallBack(Object. _RegFileCallBack)

java: long _RegFileCallBack(String Object_RegFileCallBack)

The callback function should be defined within the object. The prototype is as follows:

```
def function (self, uMsg, DataFile,ReceiveOrSendOffset,
DataSize, FileName Or Object, UniqueDataUnitID,Version ) :
```

```
Object:_RegFileCallBack( function (self, uMsg, DataFile,ReceiveOrSendOffset,
DataSize, FileName Or Object, UniqueDataUnitID,Version )  … end )
```

```
java/c#:
public void Obj_RegFileCallBack(StarObjectClass self,int uMsg, boolean
DataFile,int ReceiveOrSendOffset,int DataSize, Object FileName_Object, int
UniqueDataUnitID,String Version )
{
}
```

5.8.54 _RegFileCallBack_P

long RefValue=_RegFileCallBack_P(CallBackProc);

for lua, ruby, python, this function is same as _RegFileCallBack

```
java: long _RegFileCallBack_P(StarObjectFileCallBackInterface CallBackProc)

public interface StarObjectFileCallBackInterface{
    public void Invoke(Object CleObject,int uMsg, boolean DataFile,int
ReceiveOrSendOffset,int DataSize, Object FileName_Object, int UniqueDataUnitID,String
Version);
}

c#: long _RegFileCallBack_P(StarObjectFileCallBackInterface CallBackProc);

public delegate void StarObjectFileCallBackInterface(Object CleObject,int uMsg,
bool DataFile,int ReceiveOrSendOffset,int DataSize, Object FileName_Object, int
UniqueDataUnitID,String Version);
```

5.8.55 _UnRegFileCallBack

_UnRegFileCallBack(RefValue)

```
java: void _UnRegFileCallBack(long RefValue)
```

5.8.56 _Call

RetValue = _Call(FuncName,…)

```
java: Object _Call(String FuncName,Object...Args)
java/c#: boolean _Callbool(String FuncName,Object...Args)
java/c#: int _Callint(String FuncName,Object...Args)
java/c#: double _Calldoule(String FuncName,Object...Args)
java/c#: StarObjectClass _Callobject(String FuncName,Object...Args)
```

5.8.57 _SyncCall

RetValue = _SyncCall(FuncName,…)

java: Object _SyncCall(String FuncName,Object...Args)
java/c#: boolean _SyncCallbool(String FuncName,Object...Args)
java/c#: int _SyncCallint(String FuncName,Object...Args)
java/c#: double _SyncCalldoule(String FuncName,Object...Args)
java/c#: StarObjectClass _SyncCallobject(String FuncName,Object...Args)

The called function runs in main thread, which inits cle.

5.8.58 _RemoteCall

void = _RemoteCall(ClientID, FuncName,…) / _RemoteCallEx(ExcludeClientID, FuncName,…)

java: void _RemoteCall(int ClientID,String FuncName,Object...Args)
java: void _RemoteCallEx(int ExcludeClientID,String FuncName,Object...Args)

ClientID will be ignored at debug and client side; At server side, if ClientID equals 0, then the call will be proceed by all the client, or else the corresponding client.

FuncName is the function name. "…" is input argments, which may be number,bool,parapkg,binbuf,or string.

Calling format:

Object._RemoteCall("FuncName",Arg1,Arg2..)

Object._RemoteCall(ClientID,"FuncName",Arg1,Arg2,…)

Object._RemoteCallEx(ExcludeClientID,FuncName,…)

_RemoteCallEx indicates all client except ExcludeClientID, and only valid at server.

Object._RemoteCallEx(ExcludeClientID,"FuncName",Arg1,Arg2,…)

5.8.59 _SRemoteCall

RetCode, RetVal1,RetValue,… =_SRemoteCall(WaitTime(ms),ClientID,FuncName,…) valid at client

java: Object[] _SRemoteCall(int WaitTime,int ClientID,String FuncName,Object...Args)

FuncName is the function name. "…" is input argments, which may be number,bool,parapkg,binbuf,or string.

RetCode = 0 for succeed

Calling format:

Object._SRemoteCall(0,0,"FuncName",Arg1,Arg2..)

WaitTime: unit is ms, if equals to zero, then will wait for event.

5.8.60 _ARemoteCall

_ARemoteCall(WaitTime(ms),ClientID,CallBackFunc, FuncName, (int)Para,…)

java: void _ARemoteCall(int WaitTime,int ClientID,String CallBackFunc,String FuncName,int Para,Object...Args)

FuncName is the function name. "…" is input argments, which may be number,bool,parapkg,binbuf,or string.

Calling format:

Object._ARemoteCall(0,0,CallBackFunc,"FuncName",Para,Arg1,Arg2..)

```
def CallBackFunc( self, RetCode,ServiceGroupID,Para, RetValue) :

function Object:CallBackFunc( RetCode,ServiceGroupID, Para, RetVal1)

end
```

java/c#:

```
public void ARemoteCallBack(StarObjectClass self,int RetCode,int ServiceGroupID,int Para,Object RetValue)
{
}
```

WaitTime: unit is ms, if equals to zero, then will wait forever.

5.8.61 _ARemoteCall_P

_ARemoteCall_P(WaitTime(ms),ClientID,CallBackFunc, FuncName, (int)Para,…)

for lua, ruby, python, this function is same as __ARemoteCall

```
java: void _ARemoteCall_P(int WaitTime,int ClientID,StarObjectARemoteCallInterface CallBackProc,String FuncName,int Para,Object...Args)

public interface StarObjectARemoteCallInterface{
    public void Invoke(Object CleObject,int RetCode,int ServiceGroupID,int Para,Object RetValue);
}

c#: void _ARemoteCall_P(int WaitTime,int ClientID,StarObjectARemoteCallInterface CallBackProc,String FuncName,int Para,Object...Args);

public delegate void StarObjectARemoteCallInterface(Object CleObject,int RetCode,int ServiceGroupID,int Para,Object RetValue);
```

5.8.62 _GetRemoteAttach

Value=_GetRemoteAttach(ParaName)

```
java: Object _GetRemoteAttach(String ParaName)
```

Get attach parameters of the request, which is used for VSRCALLSRC_WEBSERVICE, and defines as follow (C format):

```
struct StructOfVSRemoteCallRequestAttach_WebService{
    struct StructOfSRPComm_HttpOnRequest *HttpRequest;
    class ClassOfSRPSXMLInterface *SoapInfo;
    VS_CHAR *OperationName;
    struct{
        VS_ULONG MimeDataSize;
```

```
        VS_INT8    *MimeDataBuf;
    }MimeData;   ->    map to BinBuf
    };
```

5.8.63 _SetDeferRspFlag

_SetDeferRspFlag ()

java: void _SetDeferRspFlag()

The response to client will be delayed. The function should be executed at the function being called.

5.8.64 _SetRetCode

_SetRetCode (int RetCode)

java: void _SetRetCode(int RetCode)

Set return code for response. the function should be executed at the function being called.

5.8.65 _SetRemoteRspAttach

_SetRemoteRspAttach (RemoteAttach) [Reserved]

java: void _SetRemoteRspAttach(Object...RemoteAttach)

The function is valid for VSRCALLSRC_WEBSERVICE:

```
struct StructOfVSRemoteCallResponseAttach_WebService{
    class ClassOfSRPSXMLInterface *SoapInfo;
    struct{
        VS_ULONG MimeDataSize;
        VS_INT8    *MimeDataBuf;
    }MimeData;
    VS_CHAR    *MimeContentType;
};
```

SoapInfo: is used to define Envelop,Head,and Body,Operation.

for example:

Object:_SetRemoteRspAttach(SoapInf_XMLInterface,MiniData_BinBuf, MimeContentType)

java/c# should use Hashtable.

5.8.66 _RemoteCallRsp

_RemoteCallRsp (int ClientID, int RemoteCallID, String RemoteCallName,int RemoteSourceTag,int RetCode, Object[] RemoteAttach,int RetType, Object RetValue)

java: void _RemoteCallRsp(int ClientID,int RemoteCallID,String RemoteCallName,int RemoteSourceTag,int RetCode,Object[] RemoteAttach,int RetType,Object RetValue)

If the remotecall response is set to be deferred, then the function is used to send response to client some times later.

ClientID: get from **Object._RemoteID** in the function being called.
RemoteCallID: get from **Object._RemoteCallID** in the function being called.
RemoteSourceTag: get from **Object._RemoteSourceTag** in the function being called.
RetValue: supported types including number,bool,parapkg,binbuf,string and object.
RemoteAttach: if not exist,should set to None
string ,Service.TYPE_CHARPTR
parapkg,Service.TYPE_PARAPKG
object,Service.TYPE_OBJPTR

5.8.67 _FillSoapRspHeader

Bool = _FillSoapRspHeader (SXml)

java: boolean _FillSoapRspHeader(StarSXmlClass SXml)

fill SOAP response header, the contents is:

```
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="urn:starcore-XXXXX">
    </SOAP-ENV:Envelope>
```

5.8.68 _CreateFunc

Bool =_CreateFunc(FuncName,"FuncScript")

java: boolean _CreateFunc(String FuncName,String FuncScript)

Valid at client and server. The is used to create lua script function.

FunctionScript format:
script starts by prefix '@', follows by script interface name with space, and then the script body.
if '@' does not exist, default is lua script.
script interface length should be less than 15 bytes.
note: only support lua in current version.

5.8.69 _CreateFuncEx

Bool =_CreateFuncEx(FuncName,"ScriptFileName")

java: boolean _CreateFuncEx(String FuncName,String ScriptFileName)

Valid at client and server, which is used to create lua script function from file.

FunctionScript format:
script starts by prefix '@', follows by script interface name with a space, and then the script body.
if '@' does not exist, default is lua script.
script interface length should be less than 15 bytes.
note: only support lua in current version.

5.8.70 _DelFunc

_DelFunc(FuncName)

java: void _DelFunc(String FuncName)

Valid at client and server, which is used to delete object's script.

5.8.71 _SaveToFile

Bool =_SaveToFile(FileName,char *PassWord,int SaveFlag, Boolean SaveNameValue)

java: boolean _SaveToFile(String FileName,String PassWord,int SaveFlag,boolean SaveNameValue)

save object to file.

The function can not save static object and client object.

5.8.72 _LoadFromFile

bool =_LoadFromFile(FileName, char *Password, bool LoadAsLocal ,bool LoadNameValue,bool UpdateFlag, bool StaticDataUseFile)

bool =_LoadFromBuf(BinBuf, char *Password, bool LoadAsLocal ,bool LoadNameValue,bool UpdateFlag, bool StaticDataUseFile)

java: boolean _LoadFromFile(String FileName, String Password, boolean LoadAsLocal,boolean LoadNameValue,boolean UpdateFlag, boolean StaticDataUseFile)

java: boolean _LoadFromBuf(StarBinBufClass BinBuf,String Password,boolean LoadAsLocal,boolean LoadNameValue,boolean UpdateFlag,boolean StaticDataUseFile)

Restore object from file or binbuf. If UpdateFlag is true, ID of object will be updated.

5.8.73 _DeferLoadFromFile

_DeferLoadFromFile(FileName, char *Password, bool LoadAsLocal ,bool LoadNameValue,bool UpdateFlag, bool StaticDataUseFile)

java: void _DeferLoadFromFile(String FileName,String Password,boolean LoadAsLocal,boolean LoadNameValue,boolean UpdateFlag,boolean StaticDataUseFile)

Restore object from file or binbuf. If UpdateFlag is true, ID of object is updated.

for example:

VDisk._LoadFromFile("d:\\Disk.Obj", "123",True, True,True)

Restore object will lead to object being deactivated,and then reactivated. If is called in object's activate event, DeferLoadFromFile function should be used, which will restore object at next Ticket(10ms).

when handles the activate event, application should check the event paramater LParam. If it equals to 1, then should not continue to call this function.

5.8.74 _ResetLoad

_ResetLoad()

java: void _ResetLoad()

clear all child objects being loaded

//Name Value functions should be called at server and client.If they are called at server, the changes will be synchonized to client automaticly.If they are called at client, the changes take effect at local.

5.8.75 _SetNameInt

Bool =_SetNameInt("Name",int,bool LocalChange)

java: boolean _SetNameInt(String Name,int Value,boolean LocalChange)

Set integer name value.

5.8.76 _GetNameInt

Int =_GetNameInt("Name",DefaultInt)

java: int _GetNameInt(String Name,int DefaultInt)

Get integer name value.

5.8.77 _SetNameFloat

Bool =_SetNameFloat("Name",float,bool LocalChange)

java: boolean _SetNameFloat(String Name,double Value,boolean LocalChange)

Set float name value.

5.8.78 _GetNameFloat

float =_GetNameFloat("Name",DefaultFloat)

java: double _GetNameFloat(String Name,double DefaultFloat)

Get float name value.

5.8.79 _SetNameStr

Bool =_SetNameStr("Name",Str,bool LocalChange)

java: boolean _SetNameStr(String Name,String Str,boolean LocalChange)

Set string name value.

5.8.80 _GetNameStr

Str =_GetNameStr("Name" ,DefaultStr)

java: String _GetNameStr(String Name,String DefaultStr)

Get string name value.

5.8.81 _SetNameTime[Reserved]

Bool =_SetNameTime("Name",Time,bool LocalChange)

java: boolean _SetNameTime(String Name,StarTimeClass Tm,boolean LocalChange)

Set datetime name value.

5.8.82 _GetNameTime[Reserved]

Time =_GetNameTime("Name",DefaultTime)

java: StarTimeClass _GetNameTime(String Name,StarTimeClass DefaultTm)

Get datetime name value.

5.8.83 _FreeNameValue

_FreeNameValue("Name")

java: void _FreeNameValue(String Name)

free name value, **Object._FreeNameValue() means free all name value.**

5.8.84 _GetNameValueType

Type =_GetNameValueType("Name")

java: int _GetNameValueType(String Name)

Get type of name value.

5.8.85 name value change call back

```
def Object_OnNameValueChange(self, Name,NameHashValue) :

Object._OnNameValueChange = Object_OnNameValueChange
```

```
function Object:_OnNameValueChange(Name,NameHashValue)

end
```

```
function _OnNameValueChange(self,Name,NameHashValue)

end
```

java/c#:

```
public void _OnNameValueChange(StarObjectClass self,String Name,int NameHashValue)
{
}
```

1. **void _RegOnNameValueChange(String FuncName)**

2. void _RegOnNameValueChange_P(StarObjectOnNameValueChangeInterface CallBackProc)

java:
public interface StarObjectOnNameValueChangeInterface{
public void Invoke(Object CleObject,String Name,int NameHashValue);
}
c#:
public delegate void StarObjectOnNameValueChangeInterface(Object CleObject,String Name,int NameHashValue)

5.8.86 simple format to set name value

simple format to set name value(name is started by '___',three '_'), LocalChange is False as default.

Object.___Name = Value
Value = Object. ___Name

5.8.87 attribute change callback

```
def Object_OnChange(self,AttributeName) :

Object_OnChange = Object_OnChange
```

```
function Object:_OnChange(AttributeName)

end
function _OnChange (self, AttributeName)

end
```

java/c#:

```
public void _OnChange(StarObjectClass self,String Name)
{
}
```

1. **void _RegOnChange(String FuncName)**
2. **void _RegOnChange_P(StarObjectOnChangeInterface CallBackProc)**

java:
public interface StarObjectOnChangeInterface{
public void Invoke(Object CleObject,String AttributeName);
}
c#:

public delegate void StarObjectOnChangeInterface(Object CleObject,String AttributeName)

object static data management.

5.8.88 _CanSetStaticData

bool =_CanSetStaticData(Size)

java: boolean _CanSetStaticData(int Size)

whether setting object static data is permited, valid at client.

5.8.89 _SetStaticData

String DataVersion =_SetStaticData(StaticAttributeName,BinBuf)

java: String _SetStaticData(String StaticAttributeName,StarBinBufClass BinBuf)

Update object static data. If succeed, the function returns static data version. Which should be set to the corresponding attribute of object. If fails, the function returns None.

StaticAttributeName: is attribute name of static data of object

BinBuf: binary buffer.

5.8.90 _SetStaticDataEx

DataVersion =_SetStaticDataEx(StaticAttributeName, DataSize,Offset, FileName)[Reserved]

java: String _SetStaticDataEx(String StaticAttributeName,int DataSize,int Offset,String FileName)

StaticAttributeName is attribute name of static data of object

5.8.91 _GetStaticData

DataVersion =_GetStaticData(StaticAttributeName,BinBuf,DataVersion, (BOOL) AutoDownLoad)

java: String _GetStaticData(String StaticAttributeName,StarBinBufClass BinBuf,String DataVersion,boolean AutoDownLoad)

StaticAttributeName is attribute name of static data of object

BinBuf: binary buffer.

DataVersion may be ““, which means not care about version.

If fails, the function returns None.

5.8.92 _WaitGetStaticData

bool =_WaitGetStaticData (StaticAttributeName,Object_CallBack, bool WaitFlag)

java: boolean _WaitGetStaticData(String StaticAttributeName,String Object_CallBack,boolean WaitFlag)

If returns False, then the static data is not downloaded or error occurred in download process.

WaitFlag=False, query whether to wait upload or download.

5.8.93 _WaitGetStaticData_P

bool =_WaitGetStaticData_P(StaticAttributeName, bool WaitFlag,CallBackProc)

for lua, ruby, python, this function is same as __WaitGetStaticData

```
java: boolean _WaitGetStaticData_P(String StaticAttributeName,boolean WaitFlag,StarObjectGetStaticDataInterface CallBackProc)

public interface StarObjectGetStaticDataInterface{
    public int Invoke(Object CleObject,int uMes,int CurSize,int MaxSize);
}

c#: bool _WaitGetStaticData_P(String StaticAttributeName,bool WaitFlag,StarObjectGetStaticDataInterface CallBackProc);

public delegate int StarObjectGetStaticDataInterface(Object CleObject,int uMes,int CurSize,int MaxSize);
```

5.8.94 _WaitSetStaticData

bool =_WaitSetStaticData (StaticAttributeName, Object_CallBack, bool WaitFlag)

```
java: boolean _WaitSetStaticData(String StaticAttributeName,String Object_CallBack,boolean WaitFlag)
```

If returns False, then the static data is not downloaded or error occurred in download process.

WaitFlag=False, query whether to wait upload or download.

```
def Object_CallBack(self,uMes,CurSize,MaxSize)

    return 0,1
```

```
function Object:CallBack(uMes,CurSize,MaxSize)

    return 0,1
end
```

```
java/c#:
public int CallBack(StarObjectClass self,int uMes, int CurSize, int MaxSize)
{
    return 0,1;
}
```

If returns 0, then the process is continue. Otherwise the process is canceled. The return value takes effect in VSFILE_ONDOWNPROGRESS/ VSFILE_ONUPPROGRESS process.

5.8.95 _WaitSetStaticData_P

bool =_WaitSetStaticData_P(StaticAttributeName, bool WaitFlag, CallBackProc)

for lua, ruby, python, this function is same as __WaitSetStaticData

```
java: boolean _WaitSetStaticData_P(String StaticAttributeName,boolean WaitFlag,StarObjectSetStaticDataInterface CallBackProc)

public interface StarObjectSetStaticDataInterface{
    public int Invoke(Object CleObject,int uMes,int CurSize,int MaxSize);
}

c#: bool _WaitSetStaticData_P(String StaticAttributeName,bool WaitFlag,StarObjectSetStaticDataInterface CallBackProc);

public delegate int StarObjectSetStaticDataInterface(Object CleObject,int uMes,int CurSize,int MaxSize);
```

5.8.96 _SaveToLuaFunc

bool=_SaveToLuaFunc (FileName,Funcname)

```
java: boolean _SaveToLuaFunc(String FileName,String Funcname)
```

The function can be used to create the lua script of object attribute value.

5.8.97 _Init

3. _Init ("attr1=value; attr2=value2; func();")

```
java: void _Init(String Arg)
```

Each sentence should be followed by';'.

syntax format:

sentences are seperated by ';'

for each sentence,

If the first char is'$', then the following '$O' will be replaced by Object before executed.

For example:"$$O:_Active();" is translated to Object:_Active() .

If not, then the following rule takes effect.

If contains '=', then translates to Object. XXXX

otherwise translate to Object: XXXX

for example:

"attr1=value; attr2=value2; func();"

$O is not case sensitive.

5.8.98 _RemoteSend

bool=_RemoteSend(ClientID, ParaPkg)

```
java: boolean _RemoteSend(int ClientID,StarParaPkgClass ParaPkg)
```

At server side, if ClientID equals to 0, then the message is sent to all client, and the object must be global object; If ClientID does not equal to 0, then the message is sent to the corresponding client;

At client side, the function means sending message to server, and ClientID will be ignored.

At receive side, application may define event handler Object_OnRemoteSend(self,Event) to process the message.

5.8.99 _WaitEvent

int RefValue= _WaitEvent(InObject,EventName, Object.Function,bool AutoDelete)
Object:_UnWaitEvent(InObject,EventName, RefValue)
Para1,…= _GetEventPara(int Event)
Only valid for lua.
Wait object event, when InObject.EventName event is triggered, the callback function will be called.

```
function Object:Function (SrcObject,int Event)
        print(self, Event )
        return
end
```

5.8.100 _GetSourceScript

int _GetSourceScript();

```
int _GetSourceScript();
```

Get script interface index which creates the object

5.8.101 _DefinedClas

Object = _DefinedClass (AttributeName);

```
StarObjectClass _DefinedClass(String AttributeName);
```

Which object defines the attribute or function

5.8.102 _IsFunctionDefined

StarObjectClass = _IsFunctionDefined(FuncName, IncludeRawOrDefaultFunction);

```
StarObjectClass _IsFunctionDefined(String FuncName,bool IncludeRawOrDefaultFunction);
```

If there are lua function or other script function registered with the object, then the function returns true.
IncludeRawOrDefaultFunction: == true, then the function of raw script object or registered using RegLuaFunc with FuncName == null is taken into account.
The return value is object or class which defines the function.

5.8.103 _FromTuple

self = _FromTuple(Index,Tuple);

```
StarObjectClass _FromTuple(int Index,Object[] tuple)
```

Set object's attributes from tuple. Index is the first attribute index.

5.8.104 _ToTuple

tuple = _ToTuple(Index,Num);

```
Object[] _ToTuple(int Index,int Num)
```

Get tuple from object's attributes. Index is first attribute index. Num is the number of attributes to tuple. If Num < 0, then all attributes will be changed to tuple from start index.

5.8.105 _AttachRawContext

boolean _AttachRawContext(String ScriptInterface,String ContextName,boolean IsClass,String ContextInfo)

Associate an object with a script class or object.

for c/c++ :
ContextName is share library name, IsClass and ContextInfo will be ignored.

for lua :
ContextName is table or userdata.
if ContextName == "{}", then create a new lua table.
if IsClass == true, then the lua value can be called to create instance.
ContextInfo will be ignored.

for python :
ContextName is module, dict, tuple, list, class.
"{}" : dict "[]Size" list "()Size" tuple
If ContextName is invalid, then the object attach python global name space.
if IsClass == true, then the python value should be a class.
ContextInfo will be ignored.

for ruby :
ContextName is module, hash, array, class.
"{}" : hash "[]Size" array
If ContextName is invalid, then the object attach ruby global name space.
if IsClass == true, then the ruby value should be a class.
ContextInfo will be ignored.

for java :
ContextName must be valid.
ContextName is class name.
ContextInfo will be ignored.

for csharp :
ContextName must be valid.

ContextName is class name.
ContextInfo will be ignored.

5.8.106 _DetachRawContext

void _DetachRawContext(boolean CallUnLockGC)
if CallUnLockGC == true, then _UnLockGC will be called autotically.

5.8.107 _GetRawContextType

String _GetRawContextType()
Get Type name of raw script object.

5.8.108 _AttachRawObject

StarObjectClass _AttachRawObject(Object NewObject,boolean IsClass)
Associated cle object with raw script object. If succeed, the function returns the object self. Or else, returns null.

5.8.109 _AssignRawObject

StarObjectClass _AssignRawObject(StarObjectClass RawObject)
copy raw object info from RawObject, and return self

5.8.110 _GetRawObject

Object _GetRawObject()
Get raw object associated with cle object

5.8.111 _HasRawContext

boolean _HasRawContext()

5.8.112 _NewRawProxyEx

StarObjectClass _NewRawProxyEx(String ScriptInterface,String AttachFunction,String ProyInfo)

This function is same as _NewRawProxy, where this object is script raw object and acts as AttachObject, and ProxyType is set to 0.

5.8.113 _GetInitPara

StarParaPkgClass _GetInitPara()

The function is valid in ONCREATE event

5.8.114 _Equals

boolean _Equals(StarObjectClass Which)

5.8.115 _SetScriptRawType

boolean _SetScriptRawType(int RawType)
The function is reserved

5.8.116 _GetScriptRawType

int _GetScriptRawType()
The function is reserved

5.8.117 _GetRefEx

int _GetRefEx()
Get object reference count.

5.8.118 _GetRefInfo

String _GetRefInfo()
object is referenced by scripts, return value is script name string, separated by ","
if object is SLockGC by the script, then there has a "*" prefix before the script name.
for example:
"lua,*python"

5.8.119 _IsValid

boolean _IsValid()

5.8.120 _GetLastError

int _GetLastError()

5.8.121 _GetLastErrorInfo

String _GetLastErrorInfo()

5.8.122 _RegSysEventProc

void _RegSysEventProc(String EventName,String FuncName)

Register object's sys event function, the eventname takes value from _OnTicket,_OnFrameTicket,_OnIdle,_OnAppActive,_OnAppDeactive,_OnServiceActive,_OnServiceDeactive,_OnCreate,_OnDestroy,_OnCreateChild,_OnDestroyChild,_OnActivating,_OnDeactivating,_OnActivate,_OnDeactivate,_OnActiveChild,_OnDeactiveChild,_OnParentBeforeChange,_OnParentChange,_OnStaticChange,_OnScriptChange,_OnSyncGroupChange,_OnChildSyncGroupChange,_OnActiveSetChange,_OnLoadMask,_OnLoadFinish,_OnRemoteSend,_OnCall

5.8.123 _RegSysEventProc_P

void _RegSysEventProc_P(String EventName,StarObjectSysEventProcInterface CallBackProc)

for lua, ruby, python, this function is same as _RegSysEventProc

for python, support decorator.

java: void _RegSysEventProc_P(String EventName,StarObjectSysEventProcInterface CallBackProc)

```
public interface StarObjectSysEventProcInterface{
    public Object[] Invoke(Object CleObject,Object CleEvent);
}
```

c#: void _RegSysEventProc_P(String EventName,StarObjectSysEventProcInterface CallBackProc);

```
public delegate object[] StarObjectSysEventProcInterface(Object CleObject,Object CleEvent);
```

5.8.124 _RegScriptProc_P

void _RegScriptProc_P(String ScriptName,StarObjectScriptProcInterface CallBackProc)

define new script function, support lua,ruby,python,java,c#.

for python, support decorator.

```
public interface StarObjectScriptProcInterface{
    public Object Invoke(Object CleObject,Object[] Paras);
}
```

c#:

```
public delegate object[] StarObjectScriptProcInterface(Object CleObject,object[] Paras);
```

5.8.125 _Iterator

Iterator _Iterator()

c#: IEnumerator _Iterator();

Support lua/python/java/c#.

5.8.126 ReleseOwnerEx

boolean _ReleseOwnerEx()

This function should be used when cle object is create by one language, and assign script function, and will not used in this language and output to other languages

5.8.127 _IsSLock

boolean _IsSLock()

5.8.128 _R

Object _R(Object AttributeNameOrIndex)
Get attribute's raw value. Object should be raw object;

5.8.129 Attribute Get or Set

value = _Get (Name)
_Set (Name,value)

5.8.130 Attribute Get or Set CallBack

From v2.5.0, cle supports two default callbacks for attributes "GetValueCallBack" and "SetValueCallBack". The SetValueCallBack is only valid for object self, and GetValueCallBack takes effect for object self and it's instance.

For an object, only one GetValueCallBack and one SetValueCallBack should be defined for each script language.

public Object[] GetValueCallBack(StarObjectClass self, String a)
public boolean SetValueCallBack(StarObjectClass self, String a,Object Val)

for example,
java:

```
StarObjectClass c = obj._New()._Assign( new StarObjectClass(){
    public Object[] GetValueCallBack(StarObjectClass self, String a)
    {
        System.out.println(a);
        return new Object[]{true,"aaaaaaaa"};
    }
    public boolean SetValueCallBack(StarObjectClass self, String a,Object Val)
    {
        System.out.println(a);
```

```
                System.out.println(Val);
                return true;
            }
        });
```

python:

```
def c_SetValueCallBack(self,name,val) :
    print(name,val)
    return False
c.SetValueCallBack = c_SetValueCallBack

def c_GetValueCallBack(self,name) :
    print(name)
    return (False,"aaaaaaaa");
c.GetValueCallBack = c_GetValueCallBack
```

for java and c#, if _RegScriptProc_P is used to define the above two function. The prototype should be as follow,

public Object GetValueCallBack(Object CleObject, Object Paras[])
public boolean SetValueCallBack(Object CleObject, Object Paras[])

for example,

```
static object GetValueCallBack(Object CLEObject,object[] Paras)
{
    Console.WriteLine(Paras[0]);
    return new Object[]{false,"aaaaaaaa"};
}
static object SetValueCallBack(Object CLEObject,object[] Paras)
{
    Console.WriteLine(Paras[0]);
    Console.WriteLine(Paras[1]);
    return false;
}

c._RegScriptProc_P( "GetValueCallBack", new StarObjectScriptProcInterface
(testgetset.GetValueCallBack));
c._RegScriptProc_P( "SetValueCallBack", new StarObjectScriptProcInterface
(testgetset.SetValueCallBack));
```

5.8.131 RawToParaPkg

java/c# : StarParaPkgClass _RawToParaPkg()

5.8.132 JSonCall

java/c# : String _JSonCall(String Buf)

Call object's function, get or set object's attribute. Input and output is json string, and Compling with JSON-RPC protocol.

- Supporting cle object as input or output parameters, which format likes {"cleobject":"ID","description":"Name[RawType]"} or {"cleobject":"ID"}
- Supporting extra tag "raw", which value is true or false. If the returned value is cle object, this tag takes effect. If false, or not exist, the returned cle object will be tried to change to json string.
  important: if the cle object is script raw object, it may be freed at any time by cle.

Lua example : _JSonCall([[{"jsonrpc": "2.0", "method": "cleget", "params": "path", "id": 1, "raw" : true}]])

- Get cle object's attribute : "method": "cleget", "params": "attribute name" or attribute index
- Get cle object's attribute : "method": "rawget", "params": "attribute name" or attribute index. this method is same as cleget except when the attribute is cle object
- Set cle object's attribute : "method": "cleset", "params": ["attribute name" or attribute index,value]
- Get cle object's name : "method": "tostring"
- Create new cle instance : "method": "clenew", "params": [xxx]. The new allocated instance's reference count is increased, the clefree must be called, or the instance must be freed by other mean, or else will case memory leak. **Note: the params must be an array**
- free cle instance : "method": "clefree"

For example,

```
res = Object:_JSonCall([[{"jsonrpc": "2.0", "method": "tt", "params": [34,{"sape":4139,"jack":4098}], "id": 1}]])
print(res)

res = cleobj:_JSonCall([[{"jsonrpc": "2.0", "method": "cleget", "params": "path", "id": 1}]])
print(res)

res = cleobj:_JSonCall([[{"jsonrpc": "2.0", "method": "tostring", "id": 1}]])
print(res)

res = py_tt:_JSonCall([[{"jsonrpc": "2.0", "method": "cleset", "params": [0,888], "id": 1}]])
print(res)

res = cleobj:_JSonCall([[{"jsonrpc": "2.0", "method": "clenew", "params": ["as",23.34], "id": 1}]])
print(res)
```

5.8.133 RestfulCall

java/c# : Object[] _ RestfulCall (String Url,String OPCode,String JsonString)

Call object's function, get or set object's attribute. Output is json string.
Url : Resource locator
OpCode : "GET"; "POST"; "PUT"; "DELETE"
JsonString : Parameter, should be like {"params": ["as",23.34]}
For lua: JsonString maybe string or table.
For python: JsonString may be string or dict
For ruby: JsonString may be hashtable.

Return Result:
(int)[0] (String)[1]
400 : url error
404 : object not found
200 : {"result":value}

url:

- **http get:**
  /objectid : get cle object's name
  /objectid/attr/attribute name : get cle object's attribute
  /objectid/attr/raw/attribute name : get cle object's attribute, if the attribute is cle object, then returns object's id. **Important:** if the attribute is cle object, it's reference count will be increased, the clefree must be called, or the instance must be freed by other mean, or else will case memory leak
  /objectid/proc/function name : call cle object's method

- **http post: upload json string should be like {"params": ["as",23.34]}**
  /objectid : new cle instance, the new instance must be freed later
  /objectid/proc/function name : call cle object's method
  /objectid/proc/raw/function name: call cle object's method, if the returned value is cle object, then returns object's id. **Important:** if the returned cle object is script raw object, it may be freed at any time by cle.

- **http put**
  /objectid/attr : set cle object's attribute, JsonString: {"params": ["attribute name" or attribute index,value]}
  /objectid/name : set cle object's name, JsonString: {"params": "object name"}

- **http delete**
  /objectid : free cle object

5.8.134 _InstNumber

java/c# : int _InstNumber()

Get the number of instances.

5.9 object defined attributes and functions

5.9.1 dynamic script language

1. set or get object attribute

For global pointer attribute, should only get, which will return the first object in the queue.

The change will take effect at local. If it is needed to synchronize to client, should use function

Object._Change("AttrName",value)

struct attribute should be changed with tuple or array. For example:

attribute P1 of Object is struct, which include two variables X and Y.

print(Object.P1.X,Object.P1.Y); lua/python/ruby

Object.P1={2,3} lua

Object.P1=(2,3) python

Object.P1=[2,3] ruby

2. call object's function

Call lua functions of object directly using function name.

calling format:

Object.FuncName(….).

FuncName is function name, may be define in object' class. The function is lua function, which prototype is int FunctionName(void *LuaState).

5.9.2 static script language[java or c#]

1. set or get object attribute

Using _Get or _Set method, for example:

Value = Object._Get(attribute name)

Object._Set(attribute name,Value);

2. call object function

Object._Call(function name, args, …)

5.10 ParaPkg object

Support bool, integer, float, string , time, object, and binbuf.

5.10.1 attribute

1. **ParaPkg._Number**
   The number of values in the package.

5.10.2 function

1. **int _T(Index)**
   java: int _T(int Index)
   Get type of value at Index, which defines as follow:

```
SRPPARATYPE_INVALID     0       //--invalid
SRPPARATYPE_INT         1       //--integer
SRPPARATYPE_FLOAT       2       //--float
SRPPARATYPE_BIN         3
SRPPARATYPE_CHARPTR     4       //--string
SRPPARATYPE_TIME    5       //--time
SRPPARATYPE_BOOL        6       //--bool
SRPPARATYPE_OBJECT      7
SRPPARATYPE_PARAPKG     8
SRPPARATYPE_INT64       9
```

   For C#, please use _TT(Index)
2. **StarParaPkgClass _Clear()**
   java: StarParaPkgClass _Clear()
   Clear all values and return self.
3. **StarParaPkgClass _Build(…)**
   java: StarParaPkgClass _Build(Object...tuple)
   Same as _FromTuple
4. **bool = _Exchange(DesIndex,SrcIndex)**
   java: boolean _Exchange(int DesIndex,int SrcIndex)
   Exchange position of two values.
5. **void _Del(Index)**
   java: void _Del(int Index)
   Delete a value.

For lua and python and ruby, app can use Para[Index] to get or set values.

6. **Bool =_AppendFrom(SrcParaPkg)**
   java: boolean _AppendFrom(StarParaPkgClass SrcParaPkg)
   Duplicate values from SrcParapkg to ParaPkg.
7. **_GetUUID(Index)**
   java: String _GetUUID(int Index)
   Get UUID value of binbuf, which returns a string.
8. **int = _GetHash(Index)**
   java: int _GetHash(int Index)

Get hash code of the value.

9. **BOOL =_SaveToFile(Index,FileName)**

java: boolean _SaveToFile(int Index,String FileName)

Save binbuf to disk file. The value at Index must be binbuf

10. **BOOL =_LoadFromFile(Index,FileName)**

java: boolean _LoadFromFile(int Index,String FileName)

Load binbuf from disk file.

11. **BOOL =_CopyBin(Index, SrcParaPkg,SrcIndex)**

java: boolean _CopyBin(int Index,StarParaPkgClass SrcParaPkg,int SrcIndex)

Duplicate binbuf from parapkg. The value at SrcIndex must be binbuf.

12. **Value =_Get (Index)**

java: Object _Get(int Index)

```
public int _Getint(int Index);
public boolean _Getbool(int Index);
public double _Getdouble(int Index);
public String _GetStr(int Index);
public StarBinBufClass _GetBinBuf(int Index);
public StarObjectClass _Getobject(int Index);
public StarParaPkgClass _GetParaPkg(int Index)
```

Get value from parapkg.For lua and python and ruby, app can use ParaPkg[Index].

13. **StarParaPkgClass _Set(Index,Value)**

java: StarParaPkgClass _Set(int Index,Object Value)

Set value to parapkg and return self, For lua and python and ruby, app can use ParaPkg[Index].

14. **Value =_GetTime (Index)**

java: StarTimeClass _GetTime(int Index)

Get time value from parapkg, For lua, app can use ParaPkg[Index].

15. **bool = _SetTime (Index,Value)**

java: boolean _SetTime(int Index,StarTimeClass Value)

Set time value to parapkg, For lua, app can use ParaPkg[Index].

16. **_SetChangeFlag (Index)**

java: void _SetChangeFlag(int Index)

Set field change flag.

17. **_SetChangeFlagEx ()**

java: void _SetChangeFlagEx()

Set all fields change flag.

18. **_ClearChangeFlag (Index)**

java: void _ClearChangeFlag(int Index)

Clear field change flag.

19. **_ClearChangeFlagEx ()**

java: void _ClearChangeFlagEx()

Clear all fields change flag.

20. **Bool =_IsChangeFlag (Index)**

java: boolean _IsChangeFlag(int Index)

whether the field is changed

21. **Bool =_IsChangeFlagEx()**

java: boolean _IsChangeFlagEx()

whether there is any field changed

22. **Bool =_SaveChangeToBuf(BinBuf)**

java: boolean _SaveChangeToBuf(StarBinBufClass BinBuf)

Pack changed fields to binbuf.

23. **Bool =_SaveChangeToBufEx(BinBuf)**

java: boolean _SaveChangeToBufEx(StarBinBufClass BinBuf)

Pack all fields to binbuf.

24. **Bool = _LoadChangeFromBuf (BinBuf)**

java: boolean _LoadChangeFromBuf(StarBinBufClass BinBuf)

Restore fields from binbuf.

25. **self = _FromTuple(Value1,…)**

java: StarParaPkgClass _FromTuple(Object...tuple)

The returned value is self. The function will clear existing items

for **python and ruby**, this function can handle dict or hashtable(for ruby). The key must be string or integer. As result, the IsDict is set to true.

26. **tuple = _ToTuple ()**

java: Object[] _ToTuple()

Restore table, tuple,or array. If error occurs, the function returns nil/NULL/None.

for **python and ruby**, IsDict == true, then this function returns dict for python and hashtable for ruby. In this case, the key must be string or integer.

27. **void _SetScriptRawType(int RawType)**

the function is reserved

28. **int _GetScriptRawType()**

the function is reserved

29. **Iterator _Iterator()**

c#: IEnumerator _Iterator();

Support lua/python/java/c#.

for ruby, this function returns the parapkg self.

30. **void _Free()**

The script object must not be used after the function is called.

31. **void _Dispose()**

This function is same as _Free.

32. **void _ReleaseOwner()**

This function is mainly for java and c#, which will decrease the effect of performance degrade of GC operation.

If the instance is returned to other language and do not used in future, this function can be called.

The script object must not be used after the function is called.

note : for ruby, parapkg supports “each”, for example,

```
for val in pa
      puts( val )
end
```

5.10.3 Attribute Get

1. value = _Get (Name/int)
if Name is int value, then thefunction is same as _Get(Index)

5.10.4 Dict and JSON function

1. StarParaPkgClass = _AsDict(bool IsDict)
The parapkg is interpreted as dict. when mapping to raw value, it will be mapped to dictionary. This function returns self.
2. bool = _IsDict()
3. index = _ FindDict(string key)
Return -1 means not found.
4. index = _ FindDictEx(int key)
Return -1 means not found.
5. bool = _ FromJSon (string jsonstring)
6. string = _ToJSon ()
The parapkg must be a dict.

5.10.5 _Equals

boolean _Equals(StarParaPkgClass Which)

5.10.6 Notes for lua/ruby/python [v3.1.0]

Use string to get or set value of parapkg, for example
Parapkg = ["aaa",123, "bbb",444]
Then,
Parapkg["aaa"] to get value 123
Parapkg["aaa"] = 456 to change 123 to 456.

5.10.7 Traversal ParaPkg

Lua:

```
p = service._ServiceGroup:_NewParaPkg(2,3,4,"2222")
for val in p:_Iterator() do
      print( val )
end
```

python:

```
p = service._ServiceGroup._NewParaPkg('111','333','4444')
for val in p :
   print( val )
```

or

```
for val in p. _Iterator() :
   print( val )
```

ruby:

```
p = $SrvGroup._NewParaPkg('111','333','4444')
p.each{ |item|    puts item+'!'}
```

java:

```
StarParaPkgClass p = SrvGroup._NewParaPkg("111","333","555");
for (Iterator iter = p._Iterator(); iter.hasNext();) {
      System.out.println(iter.next());
}
```

C#

```
StarParaPkgClass pa = SrvGroup._NewParaPkg(234,45,67);
      Foreach( var item in pa ){
      Console.WriteLine(item);
}
```

5.11 Binbuf object

Types supported:

```
#define SRPBINTYPE_BOOL      ((VS_UINT8)'z')
#define SRPBINTYPE_BYTE      ((VS_UINT8)'b')       //map to int
#define SRPBINTYPE_UBYTE     ((VS_UINT8)'B')      // map to int
#define SRPBINTYPE_CHAR      ((VS_UINT8)'c')       // map to int
#define SRPBINTYPE_SHORT     ((VS_UINT8)'h')       // map to int
#define SRPBINTYPE_USHORT ((VS_UINT8)'H')       // map to int
#define SRPBINTYPE_INT       ((VS_UINT8)'i')          // map to int
#define SRPBINTYPE_UINT      ((VS_UINT8)'I')         // map to int
#define SRPBINTYPE_LONG      ((VS_UINT8)'l')       // map to int
#define SRPBINTYPE_ULONG     ((VS_UINT8)'L')      // map to int
#define SRPBINTYPE_FLOAT     ((VS_UINT8)'d)                //double
#define SRPBINTYPE_STRING          ((VS_UINT8)'s')          //with the end of 0
#define SRPBINTYPE_STRINGEX      ((VS_UINT8)'S')         //without 0 at end
#define SRPBINTYPE_UNICODE       ((VS_UINT8)'u')          // with the end of 0
#define SRPBINTYPE_UNICODEEX     ((VS_UINT8)'U')         //without 0 at end
```

#define SRPBINTYPE_UTF8 ((VS_UINT8)'t') // with the end of 0
#define SRPBINTYPE_UTF8EX ((VS_UINT8)'T') // without 0 at end
#define SRPBINTYPE_BIN ((VS_UINT8)'r') //binary
Input uses string with single char, for example :"o", "b",etc.

5.11.1 attribute

1. **BinBuf._Size**
   size of the memory allocated
2. **BinBuf._Offset**
   size of data
3. **BinBuf._Buf**
   buffer address
4. **BinBuf._Name[r/w]**
   buffer's alias name

5.11.2 function

1. **_Init (BufSize)**
   java: void _Init(int BufSize)
   alloc memory with BufSize, the function clears existed data.
2. **_Clear ()**
   java: void _Clear()
   Clear existed data
3. **_ClearEx (Offset,Length)**
   java: void _ClearEx(int Offset,int Length)
   Clear data from Offset and Length size.
4. **Length=_Set (Offset,Length,Type,Object Value)**
   java: int _Set(int Offset,int Length,String Type,Object Value)
   Returns Length; if the function returns 0, then there is error occured. Length is reserved.
5. **object Value = _Get (Offset,Length,Type)**
   java: Object _Get(int Offset,int Length,String Type)
   If fails, returns None. Length is reserved.
6. **BOOL =_SaveToFile(FileName,TxtFileFlag = true/false)**
   java: boolean _SaveToFile(String FileName,boolean TxtFileFlag)
   Save binay data to diak file. If **TxtFileFlag=true**, then save as text file.
7. **BOOL =_LoadFromFile(FileName,TxtFileFlag = true/false)**
   java: boolean _LoadFromFile(String FileName,boolean TxtFileFlag)
   Load binary data from disk file. if **TxtFileFlag=true**, then load as text file.
8. **BOOL = _SetOffset (Offset)**
   java: boolean _SetOffset(int Offset)
   Set size of data.
9. **BOOL = _Expand (NewBufSize)**
   java: boolean _Expand(int NewBufSize)

expand buffer size.

10. **BOOL = _Fill (Offset,Length,Char)**

java: boolean _Fill(int Offset,int Length,String Val)

fill with char

11. **BOOL = _PackObject(Object)/_UnPackObject(Object)**

java: boolean _PackObject(StarObjectClass Obj)

java: boolean _UnPackObject(StarObjectClass Obj)

pack object into binbuf

12. **BOOL = _ToUTF8()**

java: boolean _ToUTF8()

Change data coding to UTF8. The buffer should be a string. If the string is ended with 0, then the converted string is ended with 0. Otherwise, without 0.

13. **BOOL = _ToAnsi ()**

java: boolean _ToAnsi()

Change data coding to Ansi, The buffer should be a string. If the string is ended with 0, then the converted string is ended with 0. Otherwise, without 0.

14. **_InsertStr(Offset,String)**

java: void _InsertStr(int Offset,String Val)

15. int =**_FindStr(Offset,String)**

java: int _FindStr(int Offset,String Val)

If not find, returns a value less than 0

16. int = **_FindStri(Offset,String)**

java: int _FindStri(int Offset,String Val)

If not find, returns a value less than 0

17. **_Print (..)**

java: void _Print(String Arg)

print string to the tail of the buf.

18. **long Handle =_OpenFile(FileName,String Mode)**

java: long _OpenFile(String FileName,String Mode)

19. **Size =_GetFileSize(long Handle)**

java: int _GetFileSize(long Handle)

20. **Length =_ReadFile(long Handle,Offset,Length)**

java: int _ReadFile(long Handle,int Offset,int Length)

21. **Length =_WriteFile(long Handle,Offset,Length)**

java: int _WriteFile(long Handle,int Offset,int Length)

22. **_CloseFile(long Handle)**

java: void _CloseFile(long Handle)

23. **bool=_IsLightBuf()**

java: boolean _IsLightBuf()

24. **BOOL =_AnsiToUnicode (code,BytesPerChar)**

java: boolean _AnsiToUnicode(String code,int BytesPerChar)

Change data coding to unicode. The buffer should be a string. If the string is ended with 0, then the converted string is ended with 0. Otherwise, without 0. Code will be ignored on windows,which may be take values fro :UCS2 UCS4 UTF-16 UTF-32 UTF-16BE UTF-16LE

UTF-32BE UTF-32LE,BytesPerChar should be set to 2 on windows.

25. **BOOL =_UnicodeToAnsi (code,BytesPerChar)**

java: boolean _UnicodeToAnsi(String code,int BytesPerChar)

Change data coding to ansi, The buffer should be a string. If the string is ended with 0, then the converted string is ended with 0. Otherwise, without 0.Code will be ignored on windows, which may be take values from: UCS2 UCS4 UTF-16 UTF-32 UTF-16BE UTF-16LE UTF-32BE UTF-32LE, BytesPerChar should be set to 2 on windows.

26. **lstring=_Read(Offset,Length)/java/c#:int Length=_Read(byte[] buf,int Offset,int Length)**

java: int _Read(byte[] Buf,int Offset,int Length)

27. **Length =_Write(Offset, lstring)/java/c#:int Length=_Write(int Offset,byte[] buf,int Length)**

java: int _Write(int Offset,byte[] Buf,int Length)

28. **_Read2:java/c#**

public int _Read2(short[] Buf,int Offset,int Length,int byte0index,int byte1index)

Length is the number of elements. byte0index and byte1index may be 0 or 1.

29. **_Write2:java/c#**

public int _Write2(int Offset,short[] Buf,int Length,int byte0index,int byte1index)

Length is the number of elements. byte0index and byte1index may be 0 or 1.

30. **_Read4:java/c#**

public int _Read4(int[] Buf,int Offset,int Length,int byte0index,int byte1index,int byte2index,int byte3index)

Length is the number of elements. byte0index and byte1index, byte2ndex , byte3dex may be 0,1,2,or 3.

31. **_Write4:java/c#**

public int _Write4(int Offset,int[] Buf,int Length,int byte0index,int byte1index,int byte2index,int byte3index)

Length is the number of elements. byte0index and byte1index, byte2ndex , byte3dex may be 0,1,2,or 3.

32. **Length = _WriteFromMemoryFile (Service,Offset, FileName)**

java: int _WriteFromMemoryFile(StarServiceClass Service,int Offset,String FileName)

Load from Memory Files of the service

33. **String= _GetMD5 ()**

java: String _GetMD5()

Get MD5

34. **Int = _GetHash()**

java: int _GetHash()

Get Hash Value.

35. **void _Free()**

The script object must not be used after the function is called.

36. **void _Dispose()**

This function is same as _Free.

33. **void _ReleaseOwner()**

This function is mainly for java and c#, which will decrease the effect of performance

degrade of GC operation.

If the instance is returned to other language and do not used in future, this function can be called.

The script object must not be used after the function is called.

34. Byte[]/string _ToBuf() v2.5.1

For java and c# this function returns bytes array. For lua/ruby/python, this function return string buf.

35. BinBuf = _ToBuf(Byte[]/string) v2.5.1

For java and c#, input parameter is bytes array. For lua/ruby/python, input parameter is string buf.

5.11.3 Attribute Get

1. value = _Get (Name/int)

if Name is int value, then thefunction is same as _Get(Offset,Length,Type)

5.12 SXML object

For Element,Text,Attribute,Comment, function returns integer, if does not extst, function returns 0 or NULL.

5.12.1 load and save

1. Bool,ErrorInfo=_LoadFromFile(FileName)
java: Object[] _LoadFromFile(String FileName)

2. Bool,ErrorInfo=_LoadFromBuf(BinBuf)
java: Object[] _LoadFromBuf(StarBinBufClass BinBuf)

3. bool,ErrorInfo=_LoadFromBufEx(String) String UTF-8 format
java: Object[] _LoadFromBufEx(String UtfArg)

4. bool=_SaveToFile(FileName)
java: boolean _SaveToFile(String FileName)

5. bool=_SaveToBuf(BinBuf)
java: boolean _SaveToBuf(StarBinBufClass BinBuf)

5.12.2 read

1. string=_GetStandalone()
java: String _GetStandalone()

2. string=_GetVersion()
java: String _GetVersion()

3. string=_GetEncoding()
java: String _GetEncoding()

4. long Element=_FindElement(string Value)
java: long _FindElement(String Value)

suppport format such as “a.b.c.d”

5. **long Element=_FindElementEx(long ParentElement, string Value)**
   java: long _FindElementEx(long ParentElement,String Value)
6. **long Element=_FirstElement(long ParentElement)**
   java: long _FirstElement(long ParentElement)
   ParentElement may be 0
7. **Element=_NextElement(long Element)**
   java: long _NextElement(long Element)
8. **Element=_ParentElement(Element)**
   java: long _ParentElement(long Element)
9. **string Value=_GetElement(Element)**
   java: String _GetElement(long Element)
10. **string Value=_GetElementEx(Element) a.b.c.d format**
    java: String _GetElementEx(long Element)
11. **Bool,nsName,nsValue= _GetNs(Element)**
    java: Object[] _GetNs(long Element)
12. **sting nsValue=_GetNsValue(Element,nsName)**
    java: String _GetNsValue(long Element,String nsName)
13. **long Attribute=_FindAttribute(Element,Name)**
    java: long _FindAttribute(long Element,String Name)
14. **long Attribute=_FirstAttribute(Element)**
    java: long _FirstAttribute(long Element)
15. **long Attribute=_NextAttribute(Attribute)**
    java: long _NextAttribute(long Attribute)
16. **string Name=_GetAttributeName(Attribute)**
    java: String _GetAttributeName(long Attribute)
17. **string Value=_GetAttributeValue(Attribute)**
    java: String _GetAttributeValue(long Attribute)
18. **string=_GetSingleText(Element)**
    java: String _GetSingleText(long Element)
19. **long Text=_FirstText(Element)**
    java: long _FirstText(long Element)
20. **long Text=_NextText(Text)**
    java: long _NextText(long Text)
21. **string Value=_GetText(Text)**
    java: String _GetText(long Text)

5.12.3 change

1. **_SetDeclaration(Version,Encoding,Standalone)**
   java: void _SetDeclaration(String Version,String Encoding,String Standalone)
2. **_RemoveDeclaration()**
   java: void _RemoveDeclaration()
3. **Element=_InsertElementBefore(ParentElement,Element,Value)**

java: long _InsertElementBefore(long ParentElement,long Element,String Value)

ParentElement/Element may be 0

4. **Element=_InsertElementAfter(ParentElement,Element,Value)**

java: long _InsertElementAfter(long ParentElement,long Element,String Value)

ParentElement/Element may be 0

5. **_RemoveElement(Element)**

java: void _RemoveElement(long Element)

6. **_SetElement(Element,Value)**

java: void _SetElement(long Element,String Value)

7. **_SetNs (Element,nsName,nsValue)**

java: void _SetNs(long Element,String nsName,String nsValue)

8. **long Text=_InsertTextBefore(ParentElement,long Text,Value,bool CDataFlag)**

java: long _InsertTextBefore(long ParentElement,long Text,String Value,boolean CDataFlag)

ParentElement/Text may be 0

9. **long Text=_InsertTextAfter(ParentElement, long Text,Value,bool CDataFlag)**

java: long _InsertTextAfter(long ParentElement,long Text,String Value,boolean CDataFlag)

ParentElement/Text may be 0

10. **_RemoveText(long Text)**

java: void _RemoveText(long Text)

11. **_SetText(Text,Value)**

java: void _SetText(long Text,String Value,boolean CDataFlag)

12. **long Comment=_InsertCommentBefore(ParentElement, long Comment,String Value)**

java: long _InsertCommentBefore(long ParentElement,long Comment,String Value)

ParentElement/Comment may be 0

13. **long Comment=_InsertCommentAfter(ParentElement, long Comment,Value)**

java: long _InsertCommentAfter(long ParentElement,long Comment,String Value)

ParentElement/Comment may be 0

14. **_RemoveComment(Comment)**

java: void _RemoveComment(long Comment)

15. **_SetComment(Comment,Value)**

java: void _SetComment(long Comment,String Value)

16. **_SetAttribute(Element,Name,Value)**

java: void _SetAttribute(long Element,String Name,String Value)

17. **_RemoveAttribute(Element,Name)**

java: void _RemoveAttribute(long Element,String Name)

5.12.4 duplicate

1. **Element=_CopyElementBefore(ParentElement,Element,SrcElement)**

java: long _CopyElementBefore(long ParentElement,long Element,long SrcElement)

ParentElement/Element may be set to 0,SrcElement may belongs to another SXml object.

2. **Element=_CopyElementAfter(ParentElement,Element, SrcElement)**

java: long _CopyElementAfter(long ParentElement,long Element,long SrcElement)

ParentElement/Element may be set to 0,SrcElement may belongs to another SXml object.

3. **bool=_CopyChild(DesElement, SrcElement)**

   java: boolean _CopyChild(long DesElement, long SrcElement)

   SrcElement may belongs to another SXml object.

4. **bool=_Dup(SrcSXML)**

   java: boolean _Dup(StarSXmlClass SrcSXML)

5.12.5 Free

1. **void _Free()**

   The script object must not be used after the function is called.

2. **void _Dispose()**

   This function is same as _Free.

3. **void _ReleaseOwner()**

   This function is mainly for java and c#, which will decrease the effect of performance degrade of GC operation.

   If the instance is returned to other language and do not used in future, this function can be called.

   The script object must not be used after the function is called.

5.13 FunctionPara object

5.13.1 function

1. **Number=_GetNumber()/_Number()**

   java: int _GetNumber()/_Number()

   get number of parameter

2. **Value= _GetValue (Index)/_Get(Index)**

   java: Object _GetValue(int Index)

   get value of parameter. For lua/python/ruby, can use [index]

3. **_Clear ()**

   java: void _Clear()

   clear all parameters

4. **bool= _SetValue (Index,Value)/_Set(Index,Value)**

   java: boolean _SetValue(int Index,Object Value)

   set parameter value. For lua/python/ruby, can use [index]=Value

5. **int = _Type (Index)**

   java: int _Type(int Index)

   get parameter type

6. **Result= _Call (Object,FunctionName)**

   java: Object _Call(StarObjectClass Obj ,String FunctionName)

   The object's function must be created with function "_CreateAtomicFunctionSimple"/" _CreateAtomicFunction"/" _CreateAtomicFunctionEx".

7. **void _Free()**

The script object must not be used after the function is called.

8. void _Dispose()

This function is same as _Free.

9. void _ReleaseOwner()

This function is mainly for java and c#, which will decrease the effect of performance degrade of GC operation.

If the instance is returned to other language and do not used in future, this function can be called.

The script object must not be used after the function is called.

5.14 CommInterface object

Running in the thread context of cle.

5.14.1 attribute

1. CommInterface. _MsgProc

message callback:

```
function CommInterface_MsgProc(self,uMes,Msg)

    return;
end
```

```
java/c#:
public void _MsgProc(int uMes,Object[] Msg)
{
}
```

uMes's value and Msg definition
CommInteface.TCP_ONCLOSE,Msg:{ConnectionID}
CommInteface.TCP_ONCONNECT,Msg:{ ServerConnectionID,ConnectionID, BinBuf_LocalSockAddr, BinBuf_PeerSockAddr, Result}
CommInteface.TCP_ONREAD,Msg:{ConnectionID}
CommInteface.TCP_ONWRITE,Msg:{ConnectionID}
CommInteface.UDP_ONREAD,Msg:{ConnectionID}
CommInteface.UDP_ONWRITE,Msg:{ConnectionID}
CommInteface.HTTP_ONSTART,Msg:{ConnectionID, (int64)FileSize, (char*)ResponseHeader}
CommInteface.HTTP_ONREAD,Msg:{ConnectionID}
CommInteface.HTTP_ONWRITE,Msg:{ConnectionID}
CommInteface.HTTP_ONFINISH,Msg:{ConnectionID,Bin_ResidualData}
CommInteface.HTTP_ONPEERFINISH,Msg:{ConnectionID}; valid for post
CommInteface.HTTP_ONERROR,Msg:{ConnectionID, (char *)ErrorInfo}
CommInteface.HTTP_ONREQUEST,Msg:{ConnectionID, BinBuf_PeerSockAddr, RequestType, BoundaryNumber, ServiceGroupIndexOrName ,(int64)FileSize, (char*)FileName,

(char*)ContentType, (char*)Cookie, BinBuf_BoundaryInfo, (char*)RequestHeader, BinBuf_RequestBody}
CommInteface.TIMER,Msg:{TimerID}
BinBuf_RequestBody: is a light-weight buffer.

2. CommInterface. _WebServerProc

```
WebServer callback:
function CommInterface_WebServerProc(self,uMes,Msg)

    return true/false(Result), true/false(continue)
end
```

```
java/c#:
public Object[] _WebServerProc(int uMes,Object[] Msg)
{
}
```

uMes's value and Msg definition
CommInteface.HTTP_ONREQUEST,Msg:{ConnectionID, PeerSockAddr, RequestType, BoundaryNumber, ServiceGroupIndexOrName ,FileSize, FileName, ContentType, Cookie, BoundaryInfo, RequestHeader, RequestBody}
RequestType : CommInteface.HTTPREQUEST_GET / CommInteface.HTTPREQUEST_POST
CommInteface.HTTP_ONREAD,Msg:{ConnectionID}
CommInteface.HTTP_ONWRITE,Msg:{ConnectionID}

CommInteface.HTTP_ONFINISH,Msg:{ConnectionID}
CommInteface.HTTP_ONPEERFINISH,Msg:{ConnectionID}; valid for post
BinBuf_RequestBody: is a light-weight buffer.

5.14.2 function

1. **void _RegMsgProc(CallBackProc)**

   ```
   java: void _RegMsgProc(String FuncName)
   ```

2. **void _RegMsgProc_P(CallBackProc)**
   for lua, ruby, python, this function is same as _RegMsgProc

   ```
   java: void _RegMsgProc_P(StarCommMsgInterface CallBackProc)

   public interface StarCommMsgInterface{
       public void Invoke(Object CommInterface,int uMes,Object[] Msg);
   }
   c#: void _RegMsgProc_P(StarCommMsgInterface CallBackProc);

   public deletage void StarCommMsgInterface(object CommInterface,int uMes,object[]
   Msg);
   ```

3. **void _RegWebServerProc(CallBackProc)**

java: void _RegWebServerProc(String FuncName)

4. **void _RegWebServerProc_P(CallBackProc)**
   for lua, ruby, python, this function is same as _RegWebServerProc

```
java: void _RegWebServerProc_P(StarCommWebServerInterface CallBackProc)

public interface StarCommWebServerInterface{
      public Object[] Invoke(Object CommInterface,int uMes,Object[] Msg);
}
c#: void _RegWebServerProc_P(StarCommWebServerInterface CallBackProc);

public delegate object[] StarCommWebServerInterface(object CommInterface, int uMes,
object[] Msg);
```

5. **ConnectionID=_TCPSetupServer(BufferPkgNum, LocalServerName, PortNumber)**

java: int _TCPSetupServer(int BufferPkgNum,String LocalServerName,int PortNumber)

If fails,it returns 0.

6. **ConnectionID=_TCPSetupClient(BufferPkgNum, ServerName, PortNumber)**

java: int _TCPSetupClient(int BufferPkgNum,String ServerName,int PortNumber)

If fails,it returns 0.

7. **Size=_TCPSend (ConnectionID,BinBuf,Offset,bool MoreData)**

java: int _TCPSend(int ConnectionID,StarBinBufClass BinBuf,int Offset,boolean MoreData)

It returns the size of data has been sent. If the data is not sent completely, then application should wait message to continue send.

8. **Size=_TCPRecv (ConnectionID,BinBuf,Offset)**

java: int _TCPRecv(int ConnectionID,StarBinBufClass BinBuf,int Offset)

return the size of data received

9. **Size=_TCPRecvLine (ConnectionID,BinBuf)**

java: int _TCPRecvLine(int ConnectionID,StarBinBufClass BinBuf)

return the size of data received

10. **_TCPRelease (ConnectionID)**

java: void _TCPRelease(int ConnectionID)

11. **ConnectionID=_UDPSetupServer(BufferPkgNum, LocalServerName, PortNumber)**

java: int _UDPSetupServer(int BufferPkgNum,String LocalServerName,int PortNumber)

If fails,it returns 0.

12. **ConnectionID=_UDPSetupClient(BufferPkgNum)**

java: int _UDPSetupClient(int BufferPkgNum)

If fails,it returns 0.

13. **Size=_UDPSend (ConnectionID,BinBuf,BinBuf_IP)**

java: int _UDPSend(int ConnectionID,StarBinBufClass BinBuf,StarBinBufClass BinBuf_IP)

It returns the size of data has been sent. If the data is not sent completely, then application should wait message to continue send. BinBuf_IP is filled with destination address, using function _UDPSetSockAddr.

14. **Size=_UDPRecv (ConnectionID,BinBuf,BinBuf_IP)**

java: int _UDPRecv(int ConnectionID,StarBinBufClass BinBuf,StarBinBufClass BinBuf_IP)

return the size of data received

15. **_UDPRelease (ConnectionID)**

java: void _UDPRelease(int ConnectionID)

16. **Bool=_UDPSetSockAddr (Name,Port,BinBuf_IP)**

java: boolean _UDPSetSockAddr(String Name,int Port,StarBinBufClass BinBuf_IP)

17. **IpString=_GetIP (BinBuf_IP)**

java: String _GetIP(StarBinBufClass BinBuf_IP)

18. **IpPort=_GetPort (BinBuf_IP)**

java: int _GetPort(StarBinBufClass BinBuf_IP)

19. **ConnectionID=_HttpDownLoad (Url,FileName)**

java: int _HttpDownLoad(String Url,String FileName)

If fails,it returns 0.

if Url contains the request file, then FileName must be null.

20. **ConnectionID=_HttpUpLoad (Url,FileName, FileSize,string ContentType,** Boolean **MultiPartFlag,** string **SaveFileName)**

java: int _HttpUpLoad(String Url,String FileName,long FileSize,String ContentType,boolean MultiPartFlag,String SaveFileName)

If fails,it returns 0.

SaveFileName : for download, if not NULL, is used to set the content_type based on file ext

: for upload, if not NULL, is used to set Content-Disposition for multipart-data it can be filename or tag&filename

: if it is filename, then [[Content-Disposition: form-data; name=\"file\"; filename=\"%s\"\r\n]]

/* : if it is tag&filename, then [[Content-Disposition: form-data; name=\"%s\"; filename=\"%s\"\r\n]]

21. **ConnectionID=_HttpDownLoadEx (Url,FileName,** string **RequestHeader)**

java: int _HttpDownLoadEx(String Url,String FileName,String RequestHeader)

If fails,it returns 0.

22. **ConnectionID=_HttpUpLoadEx (Url,FileName, FileSize,** string **RequestHeader)**

java: int _HttpUpLoadEx(String Url,String FileName,long FileSize,String RequestHeader)

If fails,it returns 0.

23. **Size= _HttpSend (ConnectionID,BinBuf,Offset,bool MoreData)**

java: int _HttpSend(int ConnectionID,StarBinBufClass BinBuf,int Offset,boolean MoreData)

It returns the size of data has been sent. If the data is not sent completely, then application should wait message to continue send.

24. **Size=_HttpRecv (ConnectionID,BinBuf,Offset)**

java: int _HttpRecv(int ConnectionID,StarBinBufClass BinBuf,int Offset)

return the size of data received

25. **_HttpRelease (ConnectionID)**

java: void _HttpRelease(int ConnectionID)

26. **ConnectionID= _HttpServer (LocalServerName, PortNumber,MaxPostSize)**

java: int _HttpServer(String LocalServerName,int PortNumber,int MaxPostSize)

If fails,it returns 0.

27. **RspString= _FormatRspHeader (*RspInfo,*ServerInfo,*Connection,*ContentType,** int64 **ContentLength)**

java: String _FormatRspHeader(String RspInfo,String ServerInfo,String LConnection,String ContentType,long ContentLength)

/*FormatRspHeader("200 OK","Microsoft-IIS/5.1","Close","text/html",268);*/

28. **string ParaValue=_ParsePara(Info,ParaName);**

java: String _ParsePara(String Info,String ParaName)

//----Para=XXX&Para2=XXX

29. **RspCode,RspInfo=_GetResponseCode (BinBuf);**

java: Object[] _GetResponseCode(StarBinBufClass BinBuf)

30. **Str=_GetResponseStr (BinBuf,string Title);**

java: String _GetResponseStr(StarBinBufClass BinBuf,String Title)

/*-- Title
Date:
Connection:
Content-Type:
Content-Length:
and so on

31. **Lenght=_GetResponseLength (BinBuf);**

java: int _GetResponseLength(StarBinBufClass BinBuf)

`Content-Length:`

32. **bool=_GetResponseBody(BinBuf,BodyBinBuf);**

java: boolean _GetResponseBody(StarBinBufClass BinBuf,StarBinBufClass BodyBinBuf)

33. **ConnectionID=_HttpLocalRequest (int RequestType, FileName,** string **ContentType,** string **Cookie, BinBuf);**

java: int _HttpLocalRequest(int RequestType,String FileName,String ContentType,String Cookie,StarBinBufClass BinBuf)

//---BinBuf:Request Body, which may be nil.

34. **ConnectionID=_HttpLocalRequestEx (HtmlPlainText);**

java: int _HttpLocalRequestEx(String HtmlPlainText)

//---Input is complete Http request. In callback _MsgProc, using HTTP_READ message to get the response. The response is complete http response.

35. **TimerID= _SetupTimer(Interval,NumberOfValid)**

java: int _SetupTimer(int Interval,int NumberOfValid)

If fails,it returns 0. Interval unit is 10ms.

36. **_KillTimer (Timer)**

java: void _KillTimer(int Timer)

37. **_WebServerRelease (ConnectionID)**

java: void _WebServerRelease(int ConnectionID)

Used by HttpServer to close connection.

38. **RspString=_FormatRspHeaderEx (*RspInfo,*ServerInfo,*Connection,*ContentType, ContentLength,ExtendInfo)**

java: String _FormatRspHeaderEx(String RspInfo,String ServerInfo,String LConnection,String ContentType,long ContentLength,String ExtendInfo)

/*FormatRspHeaderEx("200 OK","Microsoft-IIS/5.1","Close","text/html",268, "Cookie: aa=aa");*/

39. RspString= _HttpGetHeaderItem (string_Header, ItemIndex, ItemName)

java: String _HttpGetHeaderItem(String string_Header,int ItemIndex,String ItemName)

ItemName may be ““,ItemIndex starts from 0

40. RspString= _HttpGetHeaderSubItem (string_Item, SubItemIndex, SubItemName)

java: String _HttpGetHeaderSubItem(String string_Item,int SubItemIndex,String SubItemName)

SubItemName may be ““,SubItemIndex starts from 0

SubItem is seperated by “;”. Each SubItem has the format of name=value.

41. RspString=_HttpGetNVValue (Buf, Name)

java: String _HttpGetNVValue(String Buf,String Name)

SubItem is seperated by “;”. Each SubItem has the format of name=value.

42. RspString=_TimeToHttpTime (local time)

java: String _TimeToHttpTime(StarTimeClass Tm)

43. local time=_HttpTimeToTime (String)

java: StarTimeClass _HttpTimeToTime(String Stm)

44. _HttpSetCookie(string Domain,Path,Cookie,bool_secure)

java: void _HttpSetCookie(String Domain,String Path,String Cookie,boolean bool_secure)

45. _HttpClearCookie(Domain,Path,Cookie)

java: void _HttpClearCookie(String Domain,String Path,String Cookie)

46. String= _HttpGetMediaType(FileName)

java: String _HttpGetMediaType(String FileName)

47. _HttpSetMaxPostSize(ConnectionID,Size)

java: void _HttpSetMaxPostSize(int ConnectionID,int Size)

The unit of Size is KBytes

48. int PartLength,int PartOffset,string PartHeader = _HttpGetMultiPart (binbuf_RequestBody, Index,int BoundaryNumber, binbuf_Boundary)

java: Object[] _HttpGetMultiPart(StarBinBufClass RequestBody,int Index,int BoundaryNumber,StarBinBufClass Boundary)

Parse parameters in the request.

return value : (int64) `RetMultiPartBodySize, (int)PartSize, (string)PartString`

49. bool= _IsTCPConnect(ConnectionID)

java: boolean _IsTCPConnect(int ConnectionID)

If 0 is returned for send or receive function, the function may be called to determine the connection is active or not. If the connection has been closed, it returns 0.

50. bool= _IsHttpConnect(ConnectionID)

java: boolean _IsHttpConnect(int ConnectionID)

If 0 is returned for send or receive function, the function may be called to determine the connection is active or not. If the connection has been closed, it returns 0.

51. bool= _FileDownLoad (Url,LocalFileName,bool WaitFlag, Comm. Callback)

java: boolean _FileDownLoad(String Url,String LocalFileName,boolean WaitFlag,String Comm_Callback)

```
java: public void Comm_Callback(int uMes,String FileName,long MaxSize,long CurSize)
      {
      }
```

http/ftp download, for example:
comm:_FileDownLoad(http://127.0.0.1/index.html,"d:/index.html",true,nil)
comm:_FileDownLoad(http://127.0.0.1/index.html,"d:/index.html",true,comm.callback)
function comm:CallBack(uMes,FileName,MaxSize,CurSize)
end
uMes takes value from:
0 //---star download or upload
1 //---download process
2 //---finish
3 //---error
5 //---upload process

52. bool= _FileDownLoad_P (Url,LocalFileName,bool WaitFlag, Comm. Callback)

for lua, ruby, python, this function is same as _FileDownLoad

```
java: boolean _FileDownLoad_P(String Url,String LocalFileName,boolean WaitFlag,StarCommCallbackInterface CallBackProc)

public interface StarCommCallbackInterface{
      public void Invoke(Object CommInterface,int uMes,String FileName,long MaxSize,long CurSize);
}
c#: bool _FileDownLoad_P(String Url,String LocalFileName,bool WaitFlag,StarCommCallbackInterface CallBackProc);

public delegate void StarCommCallbackInterface(Object CommInterface,int uMes,String FileName,long MaxSize,long CurSize);
```

53. bool= _BufDownLoad(Url,BinBuf,WaitFlag,Comm.Callback)

```
java: boolean _BufDownLoad(String Url,StarBinBufClass BinBuf,boolean WaitFlag,String Comm_Callback)
```

http/ftp download, download data into buf

54. bool= _BufDownLoad_P(Url,BinBuf,WaitFlag,Comm.Callback)

for lua, ruby, python, this function is same as _BufDownLoad

```
java: boolean _BufDownLoad_P(String Url,StarBinBufClass BinBuf,boolean WaitFlag,StarCommCallbackInterface CallBackProc)

c#: bool _BufDownLoad_P(String Url,StarBinBufClass BinBuf,bool WaitFlag,StarCommCallbackInterface CallBackProc);

public delegate void StarCommCallbackInterface(Object CommInterface,int
```

55. bool=_FileUpLoad (Url,LocalFileName, RemoteFileName,RetBinBuf, MultiPartFlag,ContentType,WaitFlag, Comm. Callback)

```
java: boolean _FileUpLoad(String Url,String LocalFileName,String
```

RemoteFileName,StarBinBufClass RetBinBuf,boolean MultiPartFlag,String ContentType,boolean WaitFlag,String Comm_Callback)

http/ftp upload,RetBinBuf may be set to nil,for example:

comm:_FileUpLoad(http://127.0.0.1/index.html,"d:/index.html", "index.html" ,None,false,""",true,nil)

comm:_FileUpLoad(http://127.0.0.1/index.html,"d:/index.html", "index.html" ,,None,false,""",true,comm.callback)

default Content-Type: application/octet-stream

56. bool=_FileUpLoad_P (Url,LocalFileName, RemoteFileName,RetBinBuf, MultiPartFlag,ContentType,WaitFlag, Comm. Callback)

for lua, ruby, python, this function is same as _FileUpLoad

java: boolean _FileUpLoad_P(String Url,String LocalFileName,String RemoteFileName,StarBinBufClass RetBinBuf,boolean MultiPartFlag,String ContentType,boolean WaitFlag,StarCommCallbackInterface CallBackProc)

```
c#: bool _FileUpLoad_P(String Url,String LocalFileName,String RemoteFileName,StarBinBufClass RetBinBuf,bool MultiPartFlag,String ContentType,bool WaitFlag,StarCommCallbackInterface CallBackProc)
```

57. bool=_BufUpLoad (Url,BinBuf, RemoteFileName,RetBinBuf, MultiPartFlag,ContentType,WaitFlag, Comm. Callback)

java: boolean _BufUpLoad(String Url,StarBinBufClass BinBuf,String RemoteFileName,StarBinBufClass RetBinBuf,boolean MultiPartFlag,String ContentType,boolean WaitFlag,String Comm_Callback)

http/ftp upload,RetBinBuf may be set to nil.

58. bool=_BufUpLoad_P (Url,BinBuf, RemoteFileName,RetBinBuf, MultiPartFlag,ContentType,WaitFlag, Comm. Callback)

for lua, ruby, python, this function is same as _BufUpLoad

java: boolean _BufUpLoad_P(String Url,StarBinBufClass BinBuf,String RemoteFileName,StarBinBufClass RetBinBuf,boolean MultiPartFlag,String ContentType,boolean WaitFlag,StarCommCallbackInterface CallBackProc)

```
c#: bool _BufUpLoad_P(String Url,StarBinBufClass BinBuf,String RemoteFileName,StarBinBufClass RetBinBuf,bool MultiPartFlag,String ContentType,bool WaitFlag,StarCommCallbackInterface CallBackProc)
```

59. void _Free()

The script object must not be used after the function is called.

60. void _Dispose()

This function is same as _Free.

61. void _ReleaseOwner()

This function is mainly for java and c#, which will decrease the effect of performance degrade of GC operation.

If the instance is returned to other language and do not used in future, this function can be called.

The script object must not be used after the function is called.

5.14.3 Attribute Get or Set

1. **value = _Get (Name)**
2. **_Set (Name,value)**

The Name should be "_MsgProc" or "_WebServerProc"

5.15 StarObjectSpace object

Responsible for managing a set of objects, you can add objects to the group, get the objects in the group, get the list of objects in the group

5.15.1 Create a StarObjectSpace Object

Group = Service.StarObjectSpace._New("mygroup")
Java:
StarObjectClass Group = Service._GetObject("StarObjectSpace")._New("mygroup")

5.15.2 Add Object to StarObjectSpace

xxx = Service._New("MyObj")
Group.SetObject(xxx)
Xxx is a cle object.

Java
xxx = Service._New("MyObj")
Group._Call("SetObject",xxx)

5.15.3 Get Object from StarObjectSpace

Obj = Group. XXX
or
Obj = Group. GetObject("XXX")

XXX is a the name of cle object.

Java
Obj = Group._Call("_Get", "MyObj")
or
Obj = Group._Call("GetObject", "MyObj")

5.15.4 Get Object list of StarObjectSpace

Parapkg = Group.ToParaPkg()

Java

SarParaPkgClass ParaPkg = Group._Call("ToParaPkg")

5.15.5 Find Object in which StarObjectSpace

Space = Service.StarObjectSpace.FindSpace (xxx)
Java
StarObjectClass Space = Service._GetObject("StarObjectSpace")._Call("FindSpace", xxx)

5.16 Object garbage collect

Service group and service object will not being garbage collected.

If the object is create by script language, then the object is freed automaticlly when the corresponding script memory is garbage collected. If the object is created by cle, then the object is not freed when the corresponding script memory is garbage collected.

1. Object. _LockGC()/_UnLockGC()

java: void _LockGC()
java: void _UnLockGC()

LockGC increase object's reference count, and UnLockGC decrease object's reference count. It the reference count reach 0, the object will be freed.

When object is garbage collected, it's reference is decreased by 1.

2. Object. _SLockGC/_SUnLockGC()/_IsSLock

java: void _SLockGC/_SUnLockGC()

Strong lock, after the function is called, the corresponding script memory will not be garbage collected.

These functions do not affect the object's reference count

SLockGC is only valid for the scripting language being executed

SUnLockGC is also valid for other scripting language objects locked by _ReleaseOwnerEx, in addition to being valid for the scripting language being executed.

Note: Defining object's event handler, or functions corresponding to the script language, will prevent garbage collection of objects. CLE will call _SLockGC() automatically.

3. Object. _ReleaseOwnerEx()

This function should be used when cle object is create by one language, and assign script function(object is strong locked), which will not be used in this language and output to other languages

After other scripting languages have used the object, you can call _SUnLockGC to release the

object memory occupied by the scripting language.

These functions do not affect the object's reference count

4. void _SUnLockGC()

This function is provided for check all cle object’s with ReleaseOwnerEx record and trigger _SUnLockGC function of the corresponding script interface.