



opsi-script reference card (4.12.4.27)

uib gmbh

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For Windows [W], Linux [L] and MacOS [M]

Chapter 1. Copyright

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Chapter 2. Global text constants

2.1. System directories

2.1.1. System directories [W]:

`%ProgramFilesDir%`: 'c:\program files'

`%ProgramFiles32Dir%`: 'c:\Program Files (x86)' //since 4.10.8

`%ProgramFiles64Dir%`: 'c:\program files' //since 4.10.8

`%ProgramFilesSysnativeDir%`: 'c:\program files' //since 4.10.8

`%Systemroot%`: 'c:\windows'

`%System%`: 'c:\windows\system32'

`%Systemdrive%`: 'c:'

`%ProfileDir%`:

NT5: 'c:\Documents and Settings'

NT6: 'C:\users\'

2.2. Common (AllUsers) directories [W]:

`%AllUsersProfileDir%` or `%CommonProfileDir%`:

NT5: 'c:\Documents and Settings\All Users'

NT6: 'C:\Users\Public'

`%CommonStartMenuPath%` or `%CommonStartmenuDir%`:

NT5: 'c:\Documents and Settings\All Users\Startmenu'

NT6: 'C:\ProgramData\Microsoft\Windows\Start Menu'

`%CommonAppdataDir%`:

NT5: 'c:\Documents and Settings\All Users\Application Data'

NT6: 'C:\ProgramData'

`%CommonDesktopDir%`

NT5: 'c:\Documents and Settings\All Users\Desktop'

NT6: 'C:\Users\Public\Desktop'

`%CommonStartupDir%`

NT5: 'c:\Documents and Settings\All Users\Autostart'

NT6: 'C:\ProgramData\Microsoft\Windows\Start Menu\Programs\StartUp'

`%CommonProgramsDir%`

2.3. Default User directories [W]:

`%DefaultUserProfileDir%` //since 4.11.1.1

2.4. Current user directories [W]:

User is the logged in user or given by /usercontext.

`%AppdataDir%` or `%CurrentAppdataDir%` : //since 4.10.8.13

NT5: 'c:\Documents and Settings\%USERNAME%\Application Data' NT6:
'c:\users\%USERNAME%\Appdata\Roaming'

`%CurrentStartmenuDir%` //since 4.10.8.13

`%CurrentDesktopDir%` //since 4.10.8.13

`%CurrentStartupDir%` //since 4.10.8.13

`%CurrentProgramsDir%` //since 4.10.8.13

`%CurrentSendToDir%` //since 4.10.8.13

`%CurrentProfileDir%` //since 4.11.2.1

2.5. /AllUserProfiles directory constants [W/L/M]:

`%UserProfileDir%`

or

`%CurrentProfileDir%` // since 4.11.2.1

NT5: 'c:\Documents and Settings\%USERNAME%'

NT6: 'c:\users\%USERNAME%'

2.6. opsi-script Path and Directories [W/L/M]:

`%ScriptPath%` or `%ScriptDir%`

`%ScriptDrive%`

`%OpsiscriptDir%` (since 4.12.3.6), `%WinstDir%`

`%OpsiscriptVersion%` (since 4.12.3.6), `%WinstVersion%` (since 4.10.8.3)

`%Logfile%`

`%opsiScriptHelperPath%` `%ProgramFiles32Dir%` `opsi.org\opsiScriptHelper\lib` // since 4.11.3.2

`%opsiTmpDir%` : `c:\opsi.org\tmp` // since 4.11.4.3

`%opsiLogDir%` : `c:\opsi.org\log` // since 4.11.4.3

`%opsidata%` : `c:\opsi.org\data` // since 4.12.0.12

`%opsiapplog%` : `c:\opsi.org\applog` // since 4.12.0.12

2.7. Network informations [W/L/M]:

`%Host%` : value of environment variable HOST.

`%PCName%`: value of environment variable PCNAME, or if absent of COMPUTERNAME.

`%Username%` : Name of actual user.

`%IPName%` : The dns name of the pc. Usually identical with the netbios name and therefore with `%PCName%` besides that the netbios names uses to be uppercase.

`%IPAddress%` : may be the IP-Address of the machine. Use funktion `GetMyIpByTarget()` instead.

2.8. Service Data [W/L/M]

`%HostID%` : FQDN of the client

`%opsiserviceURL%`

`%opsiServer%`

`%opsiDepotId%` //since 4.11.4

`%opsiserviceUser%` FQDN used for the connection to the opsi-config-server

`%opsiservicePassword%`

`%installingProdName%`: productid //since 4.10.8

`%installingProdVersion%`: product version //since 4.10.8

`%installingProduct%` : productid (deprecated)

2.9. Functions to handle constants [W/L/M]

`replaceOpsiConstants(<string list> `)` : stringlist ` //since 4.12.3.6 [W/L/M]

`replaceOpsiConstants(<string> `)` : string ` //since 4.12.3.6 [W/L/M]

Chapter 3. In Primary Sections

3.1. Kinds of Primary Sections [W/L/M]:

[Initial]

[Actions]

[sub<identifier> `]`

sub <file name>

[ProfileActions] [W]

3.2. opsi-script control [W/L/M]:

encoding=<encoding> // (default is system encoding) since 4.11.4.2

LogLevel (deprecated)

SetLogLevel = <number> or SetLogLevel = <string> // (default=6)

```
SetLogLevel = 7
SetLogLevel = "7"
```

ExitOnError = <boolean value> // (default=false)

ScriptErrorMessages = <boolean value> // (default=true)

FatalOnSyntaxError = <boolean value> // (default=true) since 4.11.3.2

FatalOnRuntimeError = <boolean value> // (default=false) since 4.11.3.2

AutoActivityDisplay = <boolean value> // (default=false); if true shows a marquee (endless) progressbar while winbatch/dosbatch sections are . //since 4.11.4.7

forceLogInAppenMode = <boolean value> // (default=false); if true log will be send in append mode . //since 4.12.3.6

Message <string> or Message = <const string>

ShowMessageFile <string>

ShowBitMap [<file name>] [<sub title>]

comment <string> or comment = <const string>

`LogError` <string> or `LogError` = <const string>

`LogWarning` <string> or `LogWarning` = <const string>

`includeLog` <file name> <tail size> //since 4.11.2.1 [W/L/M]

`includeLog` <file name> <tail size> [<encoding>] //since 4.11.4.1 [W/L/M]

```
includeLog "%Scriptpath%\test-files\10lines.txt" "5"
```

`SetConfidential` <secret string> //since 4.11.3.5 [W/L/M]

`asConfidential`(<secret string expression>) : `string` //since 4.12.0.16 [W/L/M]

`asConfidential`(<secret stringlist expression>) : `stringlist` //since 4.12.4.15 [W/L/M]

`Pause` <string> or `Pause` = <const string>

`Stop` <string> or `stop` = <const string>

`include_insert` <file name> // since 4.11.3

`include_append` <file name> // since 4.11.3

`NormalizeWinst` // (set normal window state) since 4.11.3

`IconizeWinst` // (set minimized window state)

`MaximizeWinst` // (set maximized window state) // since 4.11.5.1

`RestoreWinst` // (restore last window state)

`SetSkinDirectory` <path to skin.ini> // since 4.11.3.5

`runningInWanMode` : boolean //since 4.12.4.17 [W/L/M]

3.3. Variables [W/L/M]:

3.3.1. Strings

`DefVar` <variable name>

`Set` <variable name> = <value>

3.3.2. Stringlists

`DefstringList` <variable name>

3.4. Functions

3.4.1. String functions

Important

`GetOS` // 'Linux' or 'Windows_NT' [W/L/M]

`getLinuxDistroType` // 'debian' or 'redhat' or 'suse' (see `getLinuxVersionMap`) [L]

`GetMsVersionInfo` //Windows Version Information [W]

`GetSystemType` //OS Architecture ("64 Bit System" or "x86 System") [W/L/M]

`getOSArchitecture` // OS Architecture (x86_32 / x86_64/ arm_64) //since 4.12.4.17 [W/L/M]

`getRegistryValue`(`<keystr>`, `<varstr>`) : string //since 4.12.0.16 [W]
`<access str>` = one of 32bit, 64bit, sysnative ; default sysnative

`GetRegistryStringValue` (``"[key] var"`)` [W]`

`GetRegistryStringValue32` (``"[key] var"`)` //since 4.10.8 [W]`

`GetRegistryStringValue64` (``"[key] var"`)` //since 4.10.8 [W]`

`GetRegistryStringValueSysNative` (``"[key] var"`)` //since 4.10.8 [W]`

`GetValueFromInifile` (`file`, `section`, `key`, `default value`) [W/L/M]

```
GetValueFromInifile("myfile", "mysec", "mykey", "")
```

`GetProductProperty` (`<PropertyName>`, `<DefaultValue>`) [W/L/M]

`GetConfidentialProductProperty` (`<PropertyName>`, `<DefaultValue>`)` ` //since 4.11.5.2 [W/L/M]

`trim`(`<string>`)` ` [W/L/M]

`lower`(`<string>`)` ` [W/L/M]

`upper`(`<string>`)` ` [W/L/M]

`unquote`(`<string>`, `<quote-string>`)` ` //since 4.11.2.1 [W/L/M]

`unquote2`(`<string>`, `<quote-string>`)` ` //since 4.11.5.2 [W/L/M]

`stringReplace`(`<string>`, `<oldPattern>`, `<newPattern>`)` ` //since 4.11.3 [W/L/M]

`strLength`(`<string>`)` ` //since 4.11.3 [W/L/M]

`strPos(<string>, <sub string>)` ` //since 4.11.3 [W/L/M]`

`strPart(<string>, <start pos>, <number of chars>)` ` //since 4.11.3 [W/L/M]`

`getValue(<key string>, <hash string list>) [W/L/M]`

`getValueBySeparator(<key string>,<separator string>,<hash string list>) //since 4.11.2.1 [W/L/M]`

`getValueFromFile(<key string>, <file name>)` ` //since 4.11.4.4 [W/L/M]`

`getValueFromFileBySeparator(<key string>,<separator string>,<file name>)` ` //since 4.11.4.4 [W/L/M]`

`getLastExitCode : string (exitcode) [W/L/M]`

Special: License Management

`DemandLicenseKey(poolId [, productId [,windowsSoftwareId]])`

```
set $mykey$ = DemandLicenseKey ("", "office2007")
```

`FreeLicense (`poolId [, productId [,windowsSoftwareId]])``

```
set $result$ = FreeLicense("", "office2007")
```

Special: Usercontext / loginscripts [W]:

`GetUserSID(<Windows Username>)` ``

`GetLoggedInUser //since 4.11.1.2`

`GetUsercontext //since 4.11.1.2`

`GetScriptMode` possible values 'Machine','Login' //since 4.11.2.1

`saveVersionToProfile` - save productversion-packageversion to local profile //since 4.11.2.1

`readVersionFromProfile` : string - read productversion-packageversion from local profile //since 4.11.2.1

`scriptWasExecutedBefore` : boolean - is true if saved and running productversion-packageversion are identical //since 4.11.2.1

Other

`GetHostsName (<hostaddress>) [W/L/M]`

`GetHostsAddr (<hostname>) [W/L/M]`

`ExtractFilePath (<path> `)` [W/L/M]`

`calculate(<arithmetic string expression> `)` // since 4.11.3.5 : knows: +-*/() [W/L/M]`

`DecStrToHexStr (<decstring>, <hexlength> `)` [W/L/M]`

`HexStrToDecStr (<hexstring> `)` [W/L/M]`

`base64EncodeStr(<string> `)` [W/L/M]`

`base64DecodeStr(<string> `)` [W/L/M]`

`convert2Jsonstr(<string> `)` //since 4.10.8.3`

`RandomStr [W/L/M]`

`RandomStrWithParameters [W/L/M]`

`RandomIntStr(<number str> `): string` [W/L/M]`

`CompareDotSeparatedStrings(<string1>, <string2> `): string` [W/L/M]`

`CompareDotSeparatedNumbers(<string1>, <string2> `): string` [W/L/M]`

`EnvVar (<environment variable> `)` [W/L/M]`

`ParamStr [W/L/M]`

`getDiffTimeSec (Time in seconds since last marktime) //since 4.11.3 [W/L/M]`

`SidToName(<well known sid> `)` //since 4.11.3: gives localized name of the sid [W]`

`GetMyIpByTarget(<target ip addr> `): string` //since 4.11.3.2 /4.11.6 [W/L/M]`

`GetIpByName(<ip addr / ip name> `)` //since 4.11.3.2 [W/L/M]`

`reencodestr(<str>, <from>, <to> `)` //since 4.11.4.2 [W/L/M]`

`strLoadTextFile (<filename>) //since 4.11.4.6 [W/L/M]`

`strLoadTextFileWithEncoding (<filename> , <encoding> `)` //since 4.11.4.6 [W/L/M]`

`GetShortWinPathName(<longpath string>) //since 4.11.5.2 [W]`

`stringinput(< message str>,< boolstr confidential> `): string` //since 4.12.1.2 [W/L/M]`

`which(<command in path> `): string` (command with path) //since 4.12.3.6 [W/L/M]`

`replaceOpsiConstants(<string> `): string` //since 4.12.3.6 [W/L/M]`

Deprecated

`GetNtVersion` Deprecated - please use `GetMsVersionInfo` [W]

`IniVar (<key>`)` : (deprecated; use GetProductProperty) [W]`

`SubstringBefore (<string1>, <string2>`)` (deprecated; use splitString / takestring) [W/L/M]`

3.4.2. String list functions**Important**

`splitString (<string1>, <string2>`)` [W/L/M]`

```
set $list1$ = splitString ("\\server\share\dir", "\")
```

`splitStringOnWhiteSpace (<string>`)` [W/L/M]`

`loadTextFile (<file name>`)` [W/L/M]`

`loadUnicodeTextFile (<file name>`)` [W]`

`loadTextFileWithEncoding (<file name> , <encoding>`)` //since 4.11.5 [W/L/M]`

`composeString (<string list>, <Link>`)` [W/L/M]`

`takeString (<index>, <list>`)` [W/L/M]`

`setStringInListAtIndex (<newstring>, <list>, <indexstr>`): stringlist` //since 4.11.6 [W/L/M]`

`takeFirstStringContaining (<list>, <search string>`)` [W/L/M]`

`getOutputStreamFromSection (<dos section name>`)` [W/L/M]`

```
set $list$= getOutputStreamFromSection ('DosInAnIcon_try')
```

`shellCall (<command string>`): stringlist (output)` //since 4.11.4.2 [W/L/M]`

```
set $list$= shellCall('net start')
```

`getReturnListFromSection (<xml section name>`)` [W/L/M]`

`getListContaining (<list>, <search string>`)` [W/L/M]`

`getListContainingList (<list1>, <list2>`)` //since 4.11.3.7 [W/L/M]`

`count (<list>`)` [W/L/M]`

`emptylist (<list> `)` //since 4.11.3.7 [W/L/M]`

`for %<identifier>`% in` <list> do <one statement | sub section> [W/L/M]`

```
for %% in $list1$ do sub_test_string
```

`GetProcessList //since 4.11.1.2; gives list of exename;pid;dom/user [W/L/M]`

`getProductPropertyList(<propname>,<default value> `)` //since 4.11.3 [W/L/M]`

`getRegistryKeyList32(<regkey> `)` //since 4.11.3 [W]`

`getRegistryKeyList64(<regkey> `)` //since 4.11.3 [W]`

`getRegistryKeyListSysnative(<regkey> `)` //since 4.11.3 [W]`

`getRegistryVarList32(<regkey> `)` //since 4.11.3 [W]`

`getRegistryVarList64(<regkey> `)` //since 4.11.3 [W]`

`getRegistryVarListSysnative(<regkey> `)` //since 4.11.3 [W]`

`getProfilesDirList //since 4.11.3.2 [W/L/M]`

`listFiles (<Path>, <Searchmask> , <SearchSubDirectories>, <[Redirection]> `)` : stringlist` //since 4.12.3 [W/L/M]`

```
Set $Filelist$ = listFiles("C:\windows\system32","*.Devices.*.dll","False","64bit")
```

`replaceOpsConstants(<string list> `)` : stringlist` //since 4.12.3.6 [W/L/M]`

Infomaps

`GetLocaleInfoMap [W]`

`GetMSVersionMap [W]`

`getLinuxVersionMap //since 4.11.4 [L]`

keys are (example):

```
Distributor ID=Ubuntu
Description=Ubuntu 12.04.2 LTS
Release=12.04
Codename=precise
kernel name=Linux
node name=detlefv05
kernel release=3.2.0-40-generic-pae
kernel version=#64-Ubuntu SMP Mon Mar 25 21:44:41 UTC 2013
machine=i686
processor=athlon
hardware platform=i386
operating system=GNU/Linux
```

`getFileInfoMap(<file name>)` [W]

`getProductMap` // since 4.11.2.4 [W/L/M]

keys are: id, name, description, advice, productversion, packageversion, priority, installationstate, lastactionrequest, lastactionresult, installedversion, installedpackage, installedmodificationtime,actionrequest

`getRegistryVarMap32(<regkey> `)`` //since 4.11.3 [W]

`getRegistryVarMap64(<regkey> `)`` //since 4.11.3 [W]

`getRegistryVarMapSysnative(<regkey> `)`` //since 4.11.3 [W]

`getHWBiosInfoMap` //since 4.11.4 [W/L/M]

`editmap(< strlist> `)`` : stringlist` //since 4.12.1.2 [W/L/M]

Other

`createStringList (<string0>, <string1> ,...)` [W/L/M]

```
set $list1$ = createStringList ('a','b')
```

`reverse (<list> `)`` [W/L/M]

`getSectionNames(<ini-file> `)`` [W/L/M]

`retrieveSection (<section name> `)`` [W/L/M]

`getSubList (<start index> : <end index>, <list> `)`` [W/L/M]

`getSubListByMatch (<search string>, <target list> `)`` :stringlist //since 4.12.0.14 [W/L/M]

`getSubListByMatch (<search list>, <target list> `)`` :stringlist //since 4.12.0.14 [W/L/M]

`getSubListByContaining (<search string>, <target list> `)` :stringlist //since 4.12.0.14 [W/L/M]`

`getSubListByContaining (<search list>, <target list> `)` :stringlist //since 4.12.0.14 [W/L/M]`

`getSubListByKey (<search string>, <target list> `)` :stringlist //since 4.12.0.14 [W/L/M]`

`getSubListByKey (<search list>, <target list> `)` :stringlist //since 4.12.0.14 [W/L/M]`

`getKeyList (<list> `)` :stringlist //since 4.12.0.14 [W/L/M]`

`addtoList(<list>,<string> `)` //since 4.10.8 [W/L/M]`

`addListToList(<dest list>,<src list> `)` //since 4.10.8 [W/L/M]`

`reencodestrlist(<list>, <from>, <to> `)` //since 4.11.4.2 [W/L/M]`

`removeFromListByContaining(<search string> ` , ` <target list> `) : stringlist ` //since 4.11.5.1 [W/L/M]`

`removeFromListByContaining(<search list> ` , ` <target list> `) : stringlist ` //since 4.11.5.1 [W/L/M]`

`removeFromListByMatch(<searchstring>,<target list> `) : stringlist ` //since 4.11.6 [W/L/M]`

3.4.3. Boolean operators and functions

`<string1> = <string2> [W/L/M]`

`<bool1> AND <bool2> [W/L/M]`

`<bool1> OR <bool2> [W/L/M]`

`NOT(<bool3>) [W/L/M]`

`FileExists (<file name> `)` [W/L/M]`

`FileExists32 (<file name> `)` [W]`

`FileExists64 (<file name> `)` [W]`

`FileExistsSysNative (<file name> `)` [W]`

`DirectoryExists (<folder path> [,<access str>]) : boolean //since 4.12.1 [W/L/M]`

'sysnative' is the default for <access str>. Otherwise, it can be '32bit', '64bit' or 'sysnative'

`FileOrFolderExists (<file or folder path> [,<access str>]) : boolean [W/L/M] 'sysnative' is the default for <access str>. Otherwise, it can be '32bit', '64bit' or 'sysnative'`

`fileIsSymlink (<file name> `)` // since 4.12.4.21 [W/L/M]`

`LineExistsIn (<string>, <file name> `)` [W/L/M]`

`LineBeginning_ExistsIn (<string>, <file name> `)` [W/L/M]`

`LineContaining_ExistsIn(<string>, <file name>)` //since 4.11.4.10: true: if a in <file name> contains <string> [W/L/M]

`XMLAddNamespace(<XMLfilename>, <XMLelementname>, <XMLnamespace>`)`` [W]

`XMLRemoveNamespace(<XMLfilename>, <XMLelementname>, <XMLnamespace>`)`` [W]

`HasMinimumSpace (<drive letter>, <capacity>`)`` [W]

Example:

```
if not (HasMinimumSpace ("%SYSTEMDRIVE%", "500 MB"))
  LogError "Required free space of 500 MB not available on %SYSTEMDRIVE%"
  isFatalError
endif
```

`opsiLicenseManagementEnabled` [W/L/M]

`runningAsAdmin` //since 4.11.1.1 [W/L/M]

`isLoginScript` //since 4.11.2.1 [W]

`contains(<str>, <substr>`) : bool`` //since 4.11.3: true if <substr> in <str> [W/L/M]

`isNumber(<str>`)`` //since 4.11.3: true if <str> represents an integer [W/L/M]

`runningOnUefi` //since 4.11.4.3: true: if the running OS was booted in UEFI mode [W]

`runningInPE` //since 4.12.0.13: true: if the running OS is a Windows PE [W/L/M]

`runningInWAnMode` //since 4.12.4.16: true: if opsiserver = localhost [W/L/M]

`isDriveReady(<drive letter>`)`` //since 4.11.4.4: true: if the drive can be accessed [W]

`runningWithGui : bool`` //since 4.12.3.6: true: if the running OS has a GUI (at Win+Mac always true)[M/L/W]

`saveTextFile(<list>, < filename>`)`` //since 4.11.4.4: true: if list is succesfully written to file [W/L/M]

`saveTextFileWithEncoding(<list>, < filename>, <encoding>`) : bool`` //since 4.11.6.4: true: if list is succesfully written to file [W/L/M]

`saveUnicodeTextFile(<list>, < filename>, <encoding>`) : bool`` //since 4.12.4.13: true: if list is succesfully written to unicode file [W/L/M]

`CompareDotSeparatedNumbers(<str1>,<relation str>,<str2>`)`` //since 4.11.5.2: [W/L/M]

`CompareDotSeparatedStrings(<str1>,<relation str>,<str2>`)`` //since 4.11.5.2: [W/L/M]

RegKeyExists(<regkey>[,<access str>]) : **bool** //since 4.12.0.16 [W]

<access str> = one of 32bit, 64bit, sysnative ; default sysnative

RegVarExists(<regkey>, <var str>) : **bool** //since 4.12.0.16 [W]

<access str> = one of 32bit, 64bit, sysnative ; default sysnative

isPingReachable(<host>) : **boolean** //since 4.12.3.6 [W/L/M]

isValidFQDN(<domain name>) : **boolean** //since 4.12.4.4 [W/L/M]

fileHasBom (<file name>) : **boolean** ` //since 4.12.4.17 [W/L/M]

3.4.4. Misc functions

Killtask <process name> [W/L/M]

requiredOpscriptVersion <relation operator> <version> //since 4.12.3.6 [W/L/M]

```
requiredOpscriptVersion >= "4.12.3.6"
```

requiredWinstVersion <relation operator> <version> [W/L/M]

outdatet - use **requiredOpscriptVersion**

UpdateEnvironment //since 4.11.5 [W]:

Subsequent calls of **winbatch** with the parameter **/RunElevated** will see the changed Environment (NT6 only).

3.4.5. Flow control

'if - else - endif' [W/L/M]

Syntax:

```
if <condition>
;statement(s)
[else
;statement(s)]
endif
```

Example:

```
Set $NTVer$ = GetMsVersionInfo
if ( $NTVer$ >= "6" )
    sub_install_win7
else
    if ( $NTVer$ = "5.1" )
        sub_install_winXP
    else
        stop "not a supported OS-Version"
    endif
endif
```

'for - to - do' Statement //since 4.11.5 [W/L/M]

for %<temporary string variable>% = <start string> **to** <end string> **do** <one statement>

Example:

```
for %s% = "1" to "5" do sub_iteration_test
```

'Switch / Case' Statement //since 4.11.5 [W/L/M]

Syntax:

```
Switch <string expression>
  Case <string const>
    <statement(s)>
  EndCase
  [DefaultCase
    <statement(s)>
  EndCase]
EndSwitch
```

Example:

```
set $ConstTest$ = "5"
Switch $ConstTest$
  Case "1"
    set $CompValue$ = "1"
  EndCase
  Case "2"
    set $CompValue$ = "2"
  EndCase
  DefaultCase
    set $CompValue$ = "notexisting"
  EndCase
EndSwitch
```

`isFatalError` [W/L/M]

`isFatalError` <string> //since 4.11.3.2 [W/L/M]

`isSuccess` //since 4.11.3.7 [W/L/M]

`isSuspended` //since 4.11.4.1 [W/L/M]

`noUpdateScript` //since 4.11.3.7 [W/L/M]

`ExitWindows /Reboot` [W/L/M]

`ExitWindows /ImmediateReboot` [W/L/M]

`ExitWindows /ImmediateLogout` [W]

`ExitWindows /ShutdownWanted` [W]

`ExitWindows /RebootWanted` (deprecated, acts like /Reboot) [W]

`sleepSeconds` <Integer> or <string> : noresult [W/L/M]

`ChangeDirectory` <directory> //since 4.11.2.6 [W/L/M]

Chapter 4. Secondary Sections

4.1. Winbatch [W/L/M]

Function: execute programs via operating system API

```
[WinBatch<identifier>` ]`
```

Modifier:

```
/LetThemGo
```

```
/WaitForProcessEnding "<program.exe>"
```

```
/TimeOutSeconds <seconds>
```

```
/WaitForWindowAppearing <window title> ('does not work with 64 Bit programs') [W]
```

```
/WaitForWindowVanish <window title> ('does not work with 64 Bit programs') [W]
```

```
/RunElevated // since 4.11.3: only at >= NT6 ; no network access [W]
```

```
/RunAsLoggedOnUser // since 4.11.3.5 ; works only inside 'userLoginScripts' [W]
```

```
/32Bit //since 4.11.3.5 [W]
```

```
/64Bit //since 4.11.3.5 [W]
```

```
/SysNative //since 4.11.3.5 [W]
```

4.2. DosBatch and DosInAnIcon (ShellBatch and ShellInAnIcon) [W/L/M]

Function: Execute section via cmd.exe [W] or bash [L/M]

```
[DosBatch<identifier>` ]` <optional parameters> <winst <modifier>>
```

```
[DosInAnIcon<identifier>` ]` <optional parameters> <winst <modifier>>
```

```
[ShellBatch<identifier>` ]` <optional parameters> <winst <modifier>>
```

```
[ShellInAnIcon<identifier>` ]` <optional parameters> <winst <modifier>>
```

Modifier: //since 4.11.1.1

```
/32Bit [W]
```

```
/64Bit [W]
```

`/SysNative` [W]

`/showoutput` [W/L/M] // since 4.11.4.7

`/WaitForProcessEnding` "<program.exe>" // since 4.12.4 [W/L/M]

`/TimeoutSeconds` <seconds> // since 4.12.4 [W/L/M]

`/RunElevated` // since 4.12.4: only at >= NT6 ; no network access [W]

The modifiers has to be seperated by 'winst' from the parameters.

```
DosInAnIcon_do_64bit_stuff winst /64Bit
```

Commands: see manual

4.3. ExecWith [W/L/M]

Function: Execute section via any interpreter

`[ExecWith<identifier> `]`` <path to interpreter>

Modifier:

`/LetThemGo`

`/EscapeStrings`

`/32Bit` //since 4.11.3.5 [W]

`/64Bit` //since 4.11.3.5 [W]

`/SysNative` //since 4.11.3.5 [W]

The modifiers has to be seperated by 'winst' from the parameters. The following example call the 64Bit version of the powershell.exe.

```
ExecWith_do_64bit_stuff "%System%\WindowsPowerShell\v1.0\powershell.exe" winst /64Bit
```

Commands: see manual

4.4. Files [W/L/M]

Function: File Operations

`[Files<identifier> `]``

Modifier [W]:

`/AllNTUserProfiles`

`/AllNTUserSendTo` [W]

`/32Bit` //since 4.10.8 [W]

`/64Bit` //since 4.10.8 [W]

`/SysNative` //since 4.10.8 [W]

Commands:

`checkTargetPath` = <destination directory> [W/L/M]

`copy` [Options] <source file(s)> <destination directory> [W/L/M]

some options:

`-s` recursive [W/L/M]

`-V` version control against targetdir [W]

`-v` version control against targetdir, %systemroot% and %system% **(do not use it)** [W]

`-c` continue without reboot even if it is needed [W]

`-d` date check [W]

`-u` update [W]

`-x` extract [W]

`-w` weak (do not overwrite protected files) [W]

`-n` no overwrite [W]

`-r` copy read only attribute [W]

`-h` follow symlinks [L] //since 4.11.6.14

`delete` [Options] <path[/mask]] // [W/L/M]

some options: `-s` recursive `-f` force

Example **(do not forget the trailing Backslash)**:

`delete -sf c:\delete_this_dir\`

`del` [Options] <path[/mask]] //since 4.11.2.1 [W/L/M]

Works like `delete` but on


```
del -s -f c:\not-exists
```

if c:\not-exists not exists it do not search complete c:\ for not-exits

Example (you may forget the trailing Backslash):

```
del -sf c:\delete_this_dir
```

```
chmod <mask> <path> //since 4.11.4.1 [L]
```

```
hardlink <existing file> <new file> // since 4.11.5 [W/L/M]
```

```
symlink <existing file> <new file> // since 4.11.5 [W/L/M]
```

At Windows `symlink` is only available at NT6 and up.

```
rename <old filename> <new filename> // since 4.11.5 [W/L/M]
```

```
move <old filename> <new filename> // since 4.11.5 [W/L/M]
```

```
zipfile <source dir> <zip file> // since 4.12.1 [W/L/M]
```

```
unzipfile <zip file> <target dir> // since 4.12.1 [W/L/M]
```

4.5. Registry [W]

Function: edit Registry

Standard method call:

```
[Registry<identifier>`]
```

works with the specified section.

Alternative method call:

```
Registry loadUnicodeTextFile(<.reg file>`) /regedit`
```

import the specified <.reg file>.

Alternative method call (deprecated):

```
Registry loadUnicodeTextFile(<.addreg file>`) /addreg`
```

import the specified <.addreg file>.

Modifier:

```
/AllNTUserDats
```

```
/32Bit //since 4.10.8
```

```
/64Bit //since 4.10.8
```

```
/SysNative //since 4.10.8
```

Commands:

```
OpenKey <Key>
```

```
openkey [HKLM\Software\opsi.org]
```

Set <varname> = <registry type>:<value>

Add <varname> = <registry type>:<value>

Examples for registry types:

```
set "var1" = "my string"
set "var2" = REG_SZ:"my string"
set "var3" = REG_EXPAND_SZ:"%ProgramFiles%"
set "var4" = REG_DWORD:123 (Decimal)
set "var5" = REG_DWORD:0x7b (Hexadecimal)
set "var6" = REG_BINARY:00 01 02 0F 10
set "var7" = REG_MULTI_SZ:"A|BC|de"
```

Supp <varname> <list char> <supplement>

```
supp "Path" ; "C:\utils; %JAVABIN%"
```

GetMultiSZFromFile <varname> <file name>

SaveValueToFile <varname> <file name>

DeleteVar <varname>

DeleteKey <registry key> (does since 4.11.2.1 also work with /AllNTUserDats)

4.6. Patches [W/L/M]

Function: edit Ini-files

[Patches<identifier>`] <file name>

Modifier:

/AllNTUserProfiles //since 4.11.3 [W]

Commands:

add [<section name>`] <variable1> = <value1>

set [<section name>`]<variable1> `= <value1>

addnew [<section name>`]<variable1> `= <value1>

```
change [<section name>`]`<variable1>` = <value1>
del [<section name>`]` <variable1> = <value1>
del [<section name>`]` <variable1>
delsec [<section name>`]`
replace <variable1>`= <value1> <variable2>`= <value2>
```

4.7. PatchTextFile [W/L/M]

Function: edit text files

```
[PatchTextFile<identifier>`]` <file name>
```

Modifier:

```
/AllNTUserProfiles //since 4.11.3.4 [W]
```

```
/encoding <encoding> //since 4.12.4.17 [W/L/M]
```

Commands:

```
Set_Mozilla_Pref ("<preference type>", "<preference key>", "<preference value>")`
```

'preference type' takes any value.

Some examples for preference types: `pref`, `user_pref`, `lock_pref` or `lockPref`.

```
AddStringListElement_To_Mozilla_Pref ("<preference type>", "<preference key>", "<add value>")`
```

```
Set_Netscape_User_Pref ("<key>", "<value>")` ('deprecated')
```

```
AddstringListElement_To_Netscape_User_Pref ('deprecated')
```

```
FindLine <search string>
```

```
FindLine_StartingWith <search string>
```

```
FindLine_Containing <search string>
```

```
GoToTop
```

```
AdvanceLine [<number of lines>]
```

```
GoToBottom
```

```
DeleteTheLine
```

```
AddLine_ <line> or Add_Line_ <line>
```

```
InsertLine <line> or Insert_Line_ <line>
```

`AppendLine` <line> or `Append_Line` <line>

`Append_File` <file name>

`Subtract_File` <file name>

`SaveToFile` <file name>

`Sorted`

`setKeyValueSeparator` <separator char> //since 4.11.4.4 [W/L/M]

`setValueByKey` <keystr> <valuestr> //since 4.11.4.4 [W/L/M]

4.8. LinkFolder [W/L/M]

Function: Startmenu + Desktop Icons

`[LinkFolder<identifier> `]``

Commands:

`set_basefolder` <system folder>

`set_subfolder` <folder path> (at Linux set always "")

```
set_link
  name:          <link name>
  target:        <path and name of the program>
  parameters:    [command line arguments]
  working_dir:   [working directory]
  icon_file:     [path and name of icon file, default=target]
  icon_index:    [number of icon in icon file, default=0] [W]
  shortcut:     [keyboard shortcut for calling the target] [W]
  link_categories: [list of categories] [L]
end_link
```

`delete_element` <link name>

`delete_subfolder` <folder path> [W]

The predefined virtual system folders which can be used are at Windows:

`desktop`, `sendto`, `startmenu`, `startup`, `programs`, `desktopdirectory`,
`common_startmenu`, `common_programs`, `common_startup`, `common_desktopdirectory`
 and at Linux:

`common_programs`, `common_startup`, `desktop`, `startup`

Predefined `link_categories` for Linux:

AudioVideo, Audio, Video, Development, Education, Game, Graphics, Network, Office, Settings, System, Utility

Examples

```
set_basefolder common_desktopdirectory
set_subfolder ""
set_link
  name: opsi-winst
  target: "%ProgramFiles32Dir%\opsi.org\opsi-client-agent\opsi-winst\winst32.exe"
end_link
```

```
[LinkFolder_configed_lin]
set_basefolder common_programs
set_subfolder ""

set_link
  name: opsi-configed-Local
  target: java
  parameters: $parameter$
  icon_file: "$InstallDir$/opsi.png"
  link_categories: System;Utility;
end_link
```

The predefined virtual system folders:

desktop, sendto, startmenu, startup, programs, desktopdirectory

are pointing to the folders of the user that the script is running. If you use it in a userLoginScript with the opsi 'User Profile Management' extension these virtual folders point to the folder of the user that just had logged in.

'shortcut' defaults to empty. // since 4.11.6.7

shortcut may be a combination of ['shift','alt','ctrl'] (not case sensitiv) divided by ' ','-','+' an a 'Key' or a 'Virtual Key Code'.

The 'Key' is a letter ('A' - 'Z') or a numeral ('0' - '9'). All other Keys must be given by there 'Virtual Key Code' identifier. To get these identifier (as well as the allowed combinations) just use the following helper program:

<http://download.uib.de/opsi4.0/helper/showkeys.exe>

4.9. OpsiServiceCall [W/L/M]

Function: opsi-Service access

`[OpsiServiceCall<identifier>`]``

Commands: see manual

4.10. PatchHosts [W/L/M]

Function: hosts-files bearbeiten

[PatchHosts<identifier> `]`

Commands:

setaddr <hostname> <IPaddress>

setname <IPaddress> <hostname>

setalias <hostname> <alias>

setalias <IPadresse> <alias>

delalias <hostname> <alias>

delalias <IPaddress> <alias>

delhost <hostname>

delhost <ipadresse>

setComment <ident> <comment>

4.11. XML2 Sections [W/L/M]

Function: edit XML files

since 4.12.1.0

[XML2<identifier> `]`

Commands:

- **strictMode** = (true/false) ; Default: false
- **openNode** <xml2 path>
Open the given Path as actual node. If the path does not exist it will be created
- **SetAttribute** <attr name> <attr value>
At the actual node set <attr value> as value of <attr name>. If <attr name> not exists, it will be created.
- **AddAttribute** <attr name> <attr value>
If at the actual node the attribute <attr name> not exists, it will be created with <attr value> as value. If <attr name> still exists, nothing will be changed.
- **DeleteAttribute** <attr name>
If at the actual node the attribute <attr name> exists, it will be deleted.

- `addNewNode` <node name>
Create at the actual node a new sub node <node name> and make this new node to the actual node.
- `setNodeText` <string>
- `DeleteNode` <xml2 path>
- `gotoParentNode`
Make the parent node to the actual node.
- `rootNodeOnCreate` = <node name> // since 4.12.4.27
If the file not exists it will be created with <node name> as root node name.

Some notes to the command parameters:

- <xml2 path> `strictMode =false`:
A line of xml node names with optional one attribute separated by ' ` // '
Example: ``node_level-1_number-1 // node_level-2_B color="green"`
- <xml2 path> `strictMode =true`:
A line of xml node names with all existing attributes separated by ' ` // '
Example: ``node_level-1_number-1 // node_level-2_B color="green" count="65"`

see also : [Section 5.25, “XML related functions \(XML2\) \[W/L/M\]:”](#)

4.12. XMLPatch [W]

Function: edit XML files

Deprecated: please use xml2 sections: [Section 4.11, “XML2 Sections \[W/L/M\]”](#)
and xml2 functions: [Section 5.25, “XML related functions \(XML2\) \[W/L/M\]:”](#)

`[XMLPatch<identifier> `]``

Commands: see manual

4.13. ExecPython [W/L/M]

Function: Execute section via python interpreter

`[ExecPython<identifier> `]``

Commands: see manual

4.14. LdapSearch [W]

Function: read from LDAP

`[LdapSearch<identifier> `]``

Commands: see manual

Chapter 5. By Topic

5.1. Compare related functions [W/L/M]

`CompareDotSeparatedStrings(<string1>, <string2> `)`` : string ` [W/L/M]

`CompareDotSeparatedStrings(<str1>,<relation str>,<str2> `)`` : bool ` //since 4.11.5.2: [W/L/M]

`CompareDotSeparatedNumbers(<string1>, <string2> `)`` : string ` [W/L/M]

`CompareDotSeparatedNumbers(<str1>,<relation str>,<str2> `)`` : bool ` //since 4.11.5.2: [W/L/M]

`boolToString(<boolean expression> `)`` : bool string (true/false) // since 4.12.0.0 [W/L/M]

`stringToBool(<string expression: true/false> `)`` : boolean // since 4.12.0.0 [W/L/M]

5.2. Crypt / Hash related functions [W/L/M]

`DecStrToHexStr (<decstring>, <hexlength> `)`` : string ` [W/L/M]

`HexStrToDecStr (<hexstring> `)`` : string ` [W/L/M]

`base64EncodeStr(<string> `)`` : string ` [W/L/M]

`base64DecodeStr(<string> `)`` : string ` [W/L/M]

`RandomStr` : string [W/L/M]

`RandomIntStr(<number str> `)`` : string ` [W/L/M]

`encryptStringBlow(<keystring>,<datastring> `)`` : string ` [W/L/M]

`decryptStringBlow(<keystring>,<datastring> `)`` : string ` [W/L/M]

`md5sumFromFile(<path to file> `)`` : string ` [W/L/M]

5.3. Defined Functions and Libraries [W/L/M]

since 4.12.0.0

Definition

```
DefFunc <func name>([calltype parameter ptype][,[calltype parameter ptype]]) : ftype
<function body>
endfunc
```

Where:

- `DefFunc` is the keyword used to start defining a local function..
- '<func name>' is the freely chosen name of the function.
- 'calltype' is the call type of the parameter [`val` | `ref`]. `val`='Call by Value', `ref`='Call by Reference'.
Default: `val`
- 'parameter' is the free selected name of the call parameter which is available as a local variable within the function under the aforementioned name.
- 'ptype' is the type of data of the parameter wether `string` or `stringlist`.
- 'ftype' is the type of data of the function wether `string`, `stringlist` or `void`. `void` declares that no result is returned.
- '<function body>': is the body of the function which opsi-script syntax must suffice.
- `endfunc` is the keyword used to end defining a local function..

```
importLib <string expr> ; import library // since 4.12.0.0
```

```
<string expr> : <file name>[.<file extension>][::<function name>]
```

If no '<file extension>' is given `.opsiscript` is used as default.

If no '::<function name>' is given, all function from the given file will be imported.

<file name> is:

- A complete path to an existing file. [W/L/M]
- A existing file in `%ScriptPath%` [W/L/M]
- A file in `%opsiScriptHelperPath%\lib` [W]
Is equivalent to: '%ProgramFiles32Dir%\opsi.org\opsiScriptHelper\lib'
- A existing file in `%ScriptPath%/../lib` [W/L/M]
- A existing file in `%WinstDir%\lib` [W] or `/usr/share/opsi-script/lib` [L]

The tests for the location of the <file name> are done in the order above. 'opsi-script' uses the first file it finds that has a matching name.

5.4. Encoding related functions [W/L/M]

```
encoding=<encoding> // (default is system encoding) since 4.11.4.2
```

```
GetLocaleInfoMap : stringlist [W]
```

```
reencodestr(<str>, <from>, <to> `) : string ` //since 4.11.4.2 [W/L/M]
```

```
reencodestrlist(<list>, <from>, <to> `) : stringlist ` //since 4.11.4.2 [W/L/M]
```

```
fileHasBom (<file name>) : boolean ` //since 4.12.4.17 [W/L/M]
```

`LoadUnicodeTextFile (<file name> `)` : stringlist` [W/L/M]`

`LoadTextFileWithEncoding(<file name> , <encoding> `)` : stringlist` //since 4.11.5 [W/L/M]`

`strLoadTextFileWithEncoding (<filename> , <encoding> `)` : string` //since 4.11.4.6 [W/L/M]`

`saveTextFileWithEncoding(<list>, < filename>`,` <encoding> `)` : bool` //since 4.11.6.4: true: if list is successfully written to file [W/L/M]`

`includeLog <file name> <tail size> [<encoding>] ` ` : noresult` //since 4.11.4.1 [W/L/M]`

5.5. Error / Warning related functions [W/L/M]

`ExitOnError = <boolean value> // (default=false)`

`ScriptErrorMessages = <boolean value> // (default=true)`

`FatalOnSyntaxError = <boolean value> // (default=true) since 4.11.3.2`

`FatalOnRuntimeError = <boolean value> // (default=false) since 4.11.3.2`

`LogError <string> or LogError = <const string>`

`LogWarning <string> or LogWarning = <const string>`

`isFatalError [W/L/M]`

`isFatalError <string> //since 4.11.3.2 [W/L/M]`

`markErrorNumber`

`errorsOccurredSinceMark <relation> <integer> : boolean`

```
markErrorNumber
comment "log error and thereby increase the error counter"
if errorsOccurredSinceMark > 0
    comment "There was an error ..."
endif
```

`getLastExitCode : string (exitcode) [W/L/M]`

`shellCall (<command string> `)` : string (exitcode)` //since 4.11.6.1 [W/L/M]`

`processCall(<string> `)` : string (exitcode)` //since 4.11.6.1 [W/L/M]`

`getLastServiceErrorClass : string`

`getLastServiceErrorMessage : string`

5.6. File related functions [W/L/M]

`strLoadTextFile (<file name>`): string` [W/L/M]`

`strLoadTextFileWithEncoding (<filename> , <encoding>`): string` //since 4.11.4.6 [W/L/M]`

`loadTextFile (<file name>`): stringlist` [W/L/M]`

`loadUnicodeTextFile (<file name>`): stringlist` [W]`

`loadTextFileWithEncoding(<file name> , <encoding>`): stringlist` //since 4.11.5 [W/L/M]`

`fileHasBom (<file name>): boolean` //since 4.12.4.17 [W/L/M]`

`FileExists (<file name>`): bool` [W/L/M]`

`FileExists32 (<file name>`): bool` [W]`

`FileExists64 (<file name>`): bool` [W]`

`FileExistsSysNative (<file name>`): bool` [W]`

`DirectoryExists (<folder path> [,<access str>]) : boolean //since 4.12.1 [W/L/M]`

'sysnative' is the default for <access str>. Otherwise, it can be '32bit', '64bit' or 'sysnative'

`FileOrFolderExists (<file or folder path> [,<access str>]) : boolean [W/L/M]` 'sysnative' is the default for <access str>. Otherwise, it can be '32bit', '64bit' or 'sysnative'

`fileIsSymlink (<file name>`): bool` // since 4.12.4.21 [W/L/M]`

`resolveSymlink (<file name>`): <file name>` // since 4.12.4.21 [W/L/M]`

`listFiles (<Path>, <Searchmask> , <SearchSubDirectories>, <[Redirection]>`): stringlist` //since 4.12.3 [W/L/M]`

```
Set $Filelist$ = listFiles("C:\windows\system32","*.Devices.*.dll","False","64bit")
```

`forcePathDelims (<path string>`): <path string>` // since 4.12.4.21 [W/L/M]`

`LineExistsIn (<string>, <file name>`): bool` [W/L/M]`

`LineBeginning_ExistsIn (<string>, <file name>`): bool` [W/L/M]`

`LineContaining_ExistsIn(<string>, <file name>) : bool //since 4.11.4.10 [W/L/M]`

true: if a in <file name> contains <string>

`saveTextFile(<list>, < filename>`): bool` //since 4.11.4.4 [W/L/M]`

true: if list is succesfully written to file

`saveTextFileWithEncoding(<list>, <filename>`, ` <encoding>`): bool` //since 4.11.6.4 [W/L/M]`
 true: if list is successfully written to file

`getFileInfoMap(<file name>) : stringlist [W]`

`getFileInfoMap32(<file name>) : stringlist //since 4.11.6.6 [W]`

`getFileInfoMap64(<file name>) : stringlist //since 4.11.6.6 [W]`

`getFileInfoMapSysnative(<file name>) : stringlist //since 4.11.6.6 [W]`

`ExtractFilePath (<path>`): string` [W/L/M]`

`ExtractFileExtension (<path>`): string` [W/L/M] //since 4.12.1`

`ExtractFileName (<path>`): string` [W/L/M] //since 4.12.1`

see also: [Section 4.4, “Files \[W/L/M\]”](#)

see also: [Section 4.7, “PatchTextFile \[W/L/M\]”](#)

5.7. Ini file related functions [W/L/M]

`GetValueFromInifile (file, section, key, default value) : string [W/L/M]`

```
GetValueFromInifile("myfile", "mysec", "mykey", "")
```

`getSectionNames(<ini-file>`): stringlist` [W/L/M]`

`GetSectionFromInifile(<ini-file>`): stringlist` [W/L/M]`

`getValue(<key string>, <hash string list>) : string [W/L/M]`

`getValueBySeparator(<key string>,<separator string>,<hash string list>) : string //since 4.11.2.1 [W/L/M]`

`getValueFromFile(<key string>, <file name>`): string` //since 4.11.4.4 [W/L/M]`

`getValueFromFileBySeparator(<key string>,<separator string>,<file name>`) : string` //since 4.11.4.4 [W/L/M]`

see also: [Section 4.6, “Patches \[W/L/M\]”](#)

5.8. Interaction [W/L/M]

`Pause <string> or Pause = <const string>`

`Stop <string> or stop = <const string>`

`setActionProgress <string> : noresult //since 4.11.3 [W/L/M]`

`Message <string> or Message = <const string>`

`ShowMessageFile <string>`

`ShowBitMap [<file name>] [<sub title>]`

`stringinput(< message str>,< boolstr confidential> `) : string` //since 4.12.1.2 [W/L/M]`

`editmap(< strlist> `) : stringlist` //since 4.12.1.2 [W/L/M]`

5.9. License Management related functions [W/L/M]

`DemandLicenseKey(poolId [, productId [,windowsSoftwareId]]) : string`

```
set $mykey$ = DemandLicenseKey ("", "office2007")
```

`Freelicense (`poolId [, productId [,windowsSoftwareId]]) : string``

```
set $result$ = Freelicense("", "office2007")
```

`getLastServiceErrorClass : string`

`getLastServiceErrorMessage : string`

`opsiLicenseManagementEnabled : bool`

5.10. Linux specific functions [W/L/M]

`GetOS : string // 'Linux' or 'Windows_NT' or 'macos' [W/L/M]`

`getLinuxDistroType : string // 'debian' or 'redhat' or 'suse' (see getLinuxVersionMap) [L]`

`getLinuxVersionMap : stringlist //since 4.11.4 [L]`

`chmod in Files sections [L/M]`

`waitForPackageLock(<wait_seconds>,<abort_on_timeout> `) : bool` // since 4.11.6.1 [L]`

`importlib "uib_lin_install" :`

`cleanupPackageSystem : void //since 4.13.4 [L]`

`installupdates : string //since 4.13.4 [L]`

`deinstall($packagelist$: stringlist) : string //since 4.13.4 [L]`

`redinstall($packagelist$: stringlist) : string` //since 4.13.4 [L]

`suseinstall($packagelist$: stringlist) : string` //since 4.13.4 [L]

`ucsinstall($packagelist$: stringlist) : string` //since 4.13.4 [L]

`genericLinInstall($packagelist$: stringlist) : string`

`linuxInstallOneOf($packagelist$: stringlist) : string`

`isOneInstalled($packagelist$: stringlist) : string`

`linuxInstallOneFile($packagefile$: string) : string`

`linuxRemoveOnePackage($packagename$: string) : string`

`linuxRemoveOneOf($packagelist$: stringlist) : string`

5.11. Logging related functions [W/L/M]

`SetLogLevel = <number>` or `SetLogLevel = <string>` // (default=6)

```
SetLogLevel = 7
SetLogLevel = "7"
```

`Message <string>` or `Message = <const string>`

`comment <string>` or `comment = <const string>`

`LogError <string>` or `LogError = <const string>`

`LogWarning <string>` or `LogWarning = <const string>`

`includeLog <file name> <tail size>` //since 4.11.2.1 [W/L/M]

`includeLog <file name> <tail size> [<encoding>]` //since 4.11.4.1 [W/L/M]

```
includeLog "%Scriptpath%\test-files\10lines.txt" "5"
```

`SetConfidential <secret string>` //since 4.11.3.5 [W/L/M]

`asConfidential(<secret string expression>) : string` //since 4.12.0.16 [W/L/M]

`asConfidential(<secret stringlist expression>) : stringlist` //since 4.12.4.15 [W/L/M]

`forceLogInAppenMode = <boolean value>` // (default=false); if true log will be send in append mode .
//since 4.12.3.6

opsi-configs

`opsi-script.global.debug_prog` : boolean ; if false: only Warnings and Errors from program logging;
default: false

`opsi-script.global.debug_lib` : boolean ; if false: only Warnings and Errors from library logging;
default: false

`opsi-script.global.default_loglevel` : intstr ; set the default log level; default: '6'

`opsi-script.global.force_min_loglevel` : intstr ; set the minimal loglevel; default: '0'

`opsi-script.global.ScriptErrorMessage` : boolean ; overwrites the opsi-script internal default; default:
false

`opsi-script.global.AutoActivityDisplay` : boolean ; overwrites the opsi-script internal default; default:
true

5.12. macOS specific functions [W/L/M]

`GetOS` : string // 'Linux' or 'Windows_NT' or 'macos' [W/L/M]

`getMacosVersionInfo` : string //macOS Version Information //since 4.12.1.0 [M]

`getMacosVersionMap` : stringlist //macOS Version map //since 4.12.1.0 [M]

`GetSystemType` : string //OS Architecture ("64 Bit System" or "x86 System") [W/L/M]

`getOSArchitecture` // OS Architecture (x86_32 / x86_64/ arm_64) //since 4.12.4.17 [W/L/M]

`importlib "uib_macosinstalllib"` :

`install_macos_app($myapp$: string) : string` [M]

`install_macos_pkg($mypkg$: string) : string` [M]

`install_macos_dmg($mydmg$: string) : string` [M]

`install_macos_zip($myzip$: string) : string` [M]

`install_macos_generic($myfile$: string) : string` [M]

5.13. Network related functions [W/L/M]

`GetHostsName (<hostaddress>) : string` [W/L/M]

`GetHostsAddr (<hostname>) : string` [W/L/M]

`GetMyIpByTarget(<target ip addr>`) : string` //since 4.11.3.2 /4.11.6 [W/L/M]`

`GetIpByName(<ip addr / ip name>`): string` //since 4.11.3.2 [W/L/M]`

`IsValidIP4 (<ip4adr>) : boolean //since 4.12.1`

`IsValidIP4Network (<ip4adr>, <netmask>) : boolean //since 4.12.1`

`IsValidIP4Host (<ip4adr>, <netmask>) : boolean //since 4.12.1`

`getIP4NetworkByAdrAndMask (<ip4adr>, <netmask>) : string //since 4.12.1`

`getDefaultNetmaskByIP4adr (<ip4adr>) : string //since 4.12.1`

`parseUrl(<url string>) : stringlist //since 4.12.1`

`createUrl(<urlcomponents list>) : string //since 4.12.1`

`isPingReachable(<host>) : boolean //since 4.12.3.6`

`IsValidFQDN(<domain name>) : boolean //since 4.12.4.4 [W/L/M]`

5.14. Number related functions [W/L/M]

`isNumber(<str>`): bool` //since 4.11.3: true if <str> represents an integer [W/L/M]`

`CompareDotSeparatedNumbers(<str1>,<relation str>,<str2>`): bool` //since 4.11.5.2: [W/L/M]`

`CompareDotSeparatedNumbers(<string1>, <string2>`): string` [W/L/M]`

`calculate(<arithmetic string expression>`): string (number)` // since 4.11.3.5 [W/L/M]
knows: +-*/()`

`DecStrToHexStr (<decstring>, <hexlength>`): string` [W/L/M]`

`HexStrToDecStr (<hexstring>`): string` [W/L/M]`

`RandomIntStr(<number str>`): string` [W/L/M]`

5.15. Operating System related functions [W/L/M]

`GetOS : string // 'Linux' or 'Windows_NT' or 'macos' [W/L/M]`

`GetMsVersionInfo : string //Windows Version Information [W]`

`GetMSVersionMap : stringlist [W]`

`getLinuxDistroType : string // 'debian' or 'redhat' or 'suse' (see getLinuxVersionMap) [L]`

`getLinuxVersionMap : stringlist //since 4.11.4 [L]`

`getMacosVersionInfo : string //macOS Version Information //since 4.12.1.0 [M]`

`getMacosVersionMap` : `stringlist` //macOS Version map //since 4.12.1.0 [M]

`GetSystemType` : `string` //OS Architecture ("64 Bit System" or "x86 System") [W/L/M]

`getOSArchitecture` // OS Architecture (x86_32 / x86_64/ arm_64) //since 4.12.4.17 [W/L/M]

`getListFromWMI`(`<wmi namespace str>`,`<wmi class str>`,`<property list>`,`<condition str>``) : `stringlist` ` //since 4.12.1.0 [W]

`EnvVar` (`<environment variable>``) : `string` ` [W/L/M]

`getProfilesDirList` : `stringlist` //since 4.11.3.2 [W/L/M]

`listFiles` (`<Path>`, `<Searchmask>` , `<SearchSubDirectories>`, `<[Redirection]>``) : `stringlist` ` //since 4.12.3 [W/L/M]

```
Set $Filelist$ = listFiles("C:\windows\system32","*.Devices.*.dll","False","64bit")
```

`which`(`<command in path>``) : `string` ` (command with path) //since 4.12.3.6 [W/L/M]

`runningAsAdmin` : `bool` //since 4.11.1.1 [W/L/M]

`runningOnUefi` : `bool` ` //since 4.11.4.3: true: if the running OS was booted in UEFI mode [W/L/M]

`runningInPE` : `bool` ` //since 4.12.0.13: true: if the running OS is a Windows PE [W]

`runningInWANMode` //since 4.12.4.16: true: if opsiserver = localhost [W/L/M]

`isDriveReady`(`<drive letter>``) : `bool` ` ` //since 4.11.4.4: true: if the drive can be accessed [W]

`runningWithGui` : `bool` ` //since 4.12.3.6: true: if the running OS with GUI (at Win+Mac always true)[M/L/W]

5.16. opsiservicecall and json Related functions [W/L/M]

`jsonIsValid`(`<jsonstr>``) : `boolean` ` //since 4.11.6: [W/L/M]

`jsonisArray`(`<jsonstr>``) : `boolean` ` //since 4.11.6: [W/L/M]

`jsonisObject`(`<jsonstr>``) : `boolean` ` //since 4.11.6: [W/L/M]

`jsonAsObjectHasKey`(`<jsonstr>`,`<keystr>``) : `boolean` ` //since 4.11.6: [W/L/M]

`jsonAsArrayCountElements`(`<jsonstr>``) : `intstr` ` //since 4.11.6: [W/L/M]

`jsonAsObjectCountElements`(`<jsonstr>``) : `intstr` ` //since 4.11.6: [W/L/M]

`jsonAsArrayGetElementByIndex`(`<jsonstr>`, `<indexstr>``) : `jsonstring` ` //since 4.11.6: [W/L/M]

`jsonAsObjectGetValueByKey(<jsonstr>, <keystr>`): valuestring` //since 4.11.6: [W/L/M]`

`jsonAsObjectSetValueByKey(<jsonstr>, <keystr>,<valuestring>`): jsonstring` //since 4.11.6: [W/L/M]`

`jsonAsObjectSetStringtypeValueByKey(<jsonstr>, <keystr>,<valuestring>`): jsonstring` //since 4.11.6: [W/L/M]`

`jsonAsObjectDeleteByKey(<jsonstr>, <keystr>`): jsonstring` //since 4.11.6.4: [W/L/M]`

`jsonAsArrayPutObjectByIndex(<jsonstr>, <indexstr>, <objectstr>`): jsonstring` //since 4.11.6: [W/L/M]`

`jsonAsArrayDeleteObjectByIndex(<jsonstr>, <indexstr>`): jsonstring` //since 4.11.6.4: [W/L/M]`

`jsonAsArrayToStringList(<jsonstr>`): stringlist` //since 4.11.6: [W/L/M]`

`jsonAsObjectGetKeyList(<jsonstr>`): stringlist` //since 4.11.6: [W/L/M]`

`jsonStringListToJsonArray(<strlist>`): jsonstr` //since 4.11.6: [W/L/M]`

`convert2Jsonstr(<string>`)` //since 4.10.8.3`

see also: OpsiServiceCall [Section 4.9, “OpsiServiceCall \[W/L/M\]”](#)

5.17. opsi related functions [W/L/M]

`getProductMap : stringlist` // since 4.11.2.4 [W/L/M]

keys are: id, name, description, advice, productversion, packageversion, priority, installationstate, lastactionrequest, lastactionresult, installedversion, installedpackage, installedmodificationtime,actionrequest

`getProductPropertyList(<propname>,<default value>`): stringlist` //since 4.11.3 [W/L/M]`

`GetProductProperty (<PropertyName>, <DefaultValue>) : string` [W/L/M]

`GetConfidentialProductProperty (<PropertyName>, <DefaultValue>`): string` //since 4.11.5.2 [W/L/M]`

`setActionProgress <string> : noresult` //since 4.11.3 [W/L/M]

`retrieveSection (<section name>`): stringlist` [W/L/M]`

`replaceOpsiConstants(<string list>`): stringlist` //since 4.12.3.6 [W/L/M]`

`replaceOpsiConstants(<string>`): string` //since 4.12.3.6 [W/L/M]`

`runningInWanMode : boolean` //since 4.12.4.17 [W/L/M]

5.18. Process and Script Related functions

`Killtask <process name> ` : noresult` [W/L/M]`

`ChangeDirectory <directory> ` : noresult ` //since 4.11.2.6 [W/L/M]`

`GetProcessList : stringlist //since 4.11.1.2; gives list of exename;pid;dom/user [W/L/M]`

`processIsRunning(<process name> `) : boolean ` //since 4.11.6.1 [W/L/M]`

`shellCall (<command string> `) : stringlist (output) ` //since 4.11.4.2 [W/L/M]`

```
set $list$= shellCall('net start')
```

`shellCall (<command string> `) : noresult ` //since 4.11.6.1 [W/L/M]`

`shellCall (<command string> `) : string (exitcode) ` //since 4.11.6.1 [W/L/M]`

`powershellcall (<commandstr> [,<access str>='sysnative' [,<policy bool str>='true']]) : stringlist (output) //since 4.12.0.16 [W]`

`powershellcall (<commandstr> [,<access str>='sysnative' [,<policy bool str>='true']]) : noresult //since 4.12.0.16 [W]`

`powershellcall (<commandstr> [,<access str>='sysnative' [,<policy bool str>='true']]) : string (exitcode) //since 4.12.0.16 [W]`

`getOutputStreamFromSection (<dos section name> `) : stringlist (output) ` [W/L/M]`

```
set $list$= getOutputStreamFromSection ('DosInAnIcon_try')
```

`processCall(<string> `) : string (exitcode) ` //since 4.11.6.1 [W/L/M]`

`getLastExitCode : string (exitcode) [W/L/M]`

`includelog <file name> <tail size> : noresult //since 4.11.2.1 [W/L/M]`

`includelog <file name> <tail size> [<encoding>] : noresult //since 4.11.4.1 [W/L/M]`

`waitForPackageLock(<seconds timeout string>,<bool should we kill> `) : bool ` //since 4.11.6.1 [L]`

`which(<command in path> `) : string ` (command with path) //since 4.12.3.6 [W/L/M]`

`executeSection(<string expr with section call> `) ` //since 4.12.3.9 [W/L/M]`

see also: ExecWith sections [Section 4.3, “ExecWith \[W/L/M\]”](#)

see also: ShellBatch sections [Section 4.2, “DosBatch and DosInAnIcon \(ShellBatch and ShellInAnIcon\) \[W/L/M\]”](#)

see also: Winbatch sections [Section 4.1, “Winbatch \[W/L/M\]”](#)

5.19. Regular expression related functions [W/L/M]:

`isRegexMatch(<string>, <pattern>)` : boolean //since 4.12.1

`getSubListByContainingRegex(<pattern>, <target list>)` : stringlist //since 4.12.1

`getSubListByContainingRegex(<pattern list>, <target list>)` : stringlist //since 4.12.1

`getRegexMatchList(<pattern>, <target list>)` : stringlist //since 4.12.1

`getRegexMatchList(<pattern list>, <target list>)` : stringlist //since 4.12.1

`removeFromListByContainingRegex(<pattern>, <target list>)` : stringlist //since 4.12.1

`removeFromListByContainingRegex(<pattern list>, <target list>)` : stringlist //since 4.12.1

`stringReplaceRegex(<string>, <pattern>, <replacement string>)` : string //since 4.12.1

`stringReplaceRegexInList(<target list>, <pattern>, <replacement string>)` : stringlist //since 4.12.1

5.20. Registry related functions [W]

`getRegistryValue(<keystr>, <varstr>)` : string //since 4.12.0.16 [W]
<access str> = one of 32bit, 64bit, sysnative ; default sysnative

`GetRegistrystringValue(`"[key] var")` : string` [W]

`GetRegistryStringValue32 (`"[key] var")` : string` //since 4.10.8 [W]

`GetRegistryStringValue64 (`"[key] var")` : string` //since 4.10.8 [W]

`GetRegistryStringValueSysNative (`"[key] var")` : string` //since 4.10.8 [W]

`getRegistryKeyList32(<regkey> `)` : stringlist` //since 4.11.3 [W]

`getRegistryKeyList64(<regkey> `)` : stringlist` //since 4.11.3 [W]

`getRegistryKeyListSysnative(<regkey> `)` : stringlist` //since 4.11.3 [W]

`getRegistryVarList32(<regkey> `)` : stringlist` //since 4.11.3 [W]

`getRegistryVarList64(<regkey> `)` : stringlist` //since 4.11.3 [W]

`getRegistryVarListSysnative(<regkey> `)` : stringlist` //since 4.11.3 [W]

`getRegistryVarMap32(<regkey> `)` : stringlist` //since 4.11.3 [W]

`getRegistryVarMap64(<regkey> `)` : stringlist` //since 4.11.3 [W]

`getRegistryVarMapSysnative(<regkey>`): stringlist` //since 4.11.3 [W]`

`RegKeyExists(<regkey>[,<access str>]) : bool //since 4.12.0.16 [W]`
 <access str> = one of 32bit, 64bit, sysnative ; default sysnative

`RegVarExists(<regkey>, <var str>) : bool //since 4.12.0.16 [W]`
 <access str> = one of 32bit, 64bit, sysnative ; default sysnative

see also: [Section 4.5, “Registry \[W\]”](#)

5.21. String handling functions [W/L/M]

`splitString (<string1>, <string2>`): stringlist` [W/L/M]`

```
set $list1$ = splitString ("\\server\share\dir","\")
```

`splitStringOnWhiteSpace (<string>`): stringlist` [W/L/M]`

`composeString (<string list>, <Link>`): string` [W/L/M]`

`takeString (<index>, <list>`): string` [W/L/M]`

`setStringInListAtIndex(<newstring>,<list>,<indexstr>`): stringlist` //since 4.11.6 [W/L/M]`

`takeFirstStringContaining(<list>,<search string>`): string` [W/L/M]`

`getIndexFromListByContaining(<list> : stringlist,<search string> : string`): <number> : string //since 4.12.0.13 [W/L/M]`

`contains(<str>, <substr>`): bool` //since 4.11.3: true if <substr> in <str> [W/L/M]`

`isNumber(<str>`): bool` //since 4.11.3: true if <str> represents an integer [W/L/M]`

`trim(<string>`): string` [W/L/M]`

`lower(<string>`): string` [W/L/M]`

`upper(<string>`): string` [W/L/M]`

`unquote(<string>,<quote-string>`): string` //since 4.11.2.1 [W/L/M]`

`unquote2(<string>,<quote-string>`): string` //since 4.11.5.2 [W/L/M]`

`stringReplace(<string>, <oldPattern>, <newPattern>`): string` //since 4.11.3 [W/L/M]`

`strLength(<string>`): string (number)` //since 4.11.3 [W/L/M]`

`strPos(<string>, <sub string>`): string (numner)` //since 4.11.3 [W/L/M]`

`strPart(<string>, <start pos>, <number of chars>`): string` //since 4.11.3 [W/L/M]`

`getValue(<key string>, <hash string list>) : string [W/L/M]`

`getValueBySeparator(<key string>,<separator string>,<hash string list>) : string //since 4.11.2.1 [W/L/M]`

`getValueFromFile(<key string>, <file name>`): string` //since 4.11.4.4 [W/L/M]`

`getValueFromFileBySeparator(<key string>,<separator string>,<file name>`): string` //since 4.11.4.4 [W/L/M]`

`EscapeString: <sequence of characters> : string// [W/L/M]`

`stringReplaceRegex(<string>, <pattern>, <replacement string>) : string //since 4.12.1 [W/L/M]`

`stringinput(< message str>,< boolstr confidential>`): string` //since 4.12.1.2 [W/L/M]`

5.22. Stringlist handling functions [W/L/M]

`getListContaining(<list>,<search string>`): stringlist` [W/L/M]`

`getListContainingList(<list1>,<list2>`): stringlist` //since 4.11.3.7 [W/L/M]`

`getIndexFromListByContaining(<list> : stringlist,<search string> : string`): <number> : string //since 4.12.0.13 [W/L/M]`

`count (<list>`): string (number)` [W/L/M]`

`emptylist (<list>`): stringlist` //since 4.11.3.7 [W/L/M]`

`for %<identifier>% in` <list> do <one statement | sub section> [W/L/M]`

```
for %s% in $list1$ do sub_test_string
```

`createStringList (<string0>, <string1> ,...) : stringlist [W/L/M]`

```
set $list1$ = createStringList ('a','b')
```

`reverse (<list>`): stringlist` [W/L/M]`

`getSubList (<start index> : <end index>, <list>`): stringlist` [W/L/M]`

`getSubListByMatch (<search string>, <target list>`): stringlist //since 4.12.0.14 [W/L/M]`

`getSubListByMatch (<search list>, <target list>`): stringlist //since 4.12.0.14 [W/L/M]`

`getSubListByContaining (<search string>, <target list> `)` : stringlist //since 4.12.0.14 [W/L/M]`

`getSubListByContaining (<search list>, <target list> `)` : stringlist //since 4.12.0.14 [W/L/M]`

`getSubListByKey (<search string>, <target list> `)` : stringlist //since 4.12.0.14 [W/L/M]`

`getSubListByKey (<search list>, <target list> `)` : stringlist //since 4.12.0.14 [W/L/M]`

`getKeyList (<list> `)` : stringlist //since 4.12.0.14 [W/L/M]`

`addtoList(<list>,<string> `)` : stringlist ` //since 4.10.8 [W/L/M]`

`addListToList(<dest list>,<src list> `)` : stringlist ` //since 4.10.8 [W/L/M]`

`reencodestrlist(<list>, <from>, <to> `)` : stringlist ` //since 4.11.4.2 [W/L/M]`

`removeFromListByContaining(<search string> ` , ` <target list> `)` : stringlist ` //since 4.11.5.1 [W/L/M]`

`removeFromListByContaining(<search list> ` , ` <target list> `)` : stringlist ` //since 4.11.5.1 [W/L/M]`

`removeFromListByMatch(<searchstring>,<target list> `)` : stringlist ` //since 4.11.6 [W/L/M]`

`takeString (<index>, <list> `)` : string ` [W/L/M]`

`takeFirstStringContaining(<list>,<search string> `)` : string ` [W/L/M]`

`setStringInListAtIndex(<newstring>,<list>,<indexstr> `)` : stringlist ` //since 4.11.6 [W/L/M]`

`jsonAsArrayToStringList(<jsonstr> `)` : stringlist ` //since 4.11.6: [W/L/M]`

`jsonStringListToJsonArray(<strlist> `)` : jsonstr ` //since 4.11.6: [W/L/M]`

`jsonAsObjectGetKeyList(<jsonstr> `)` : stringlist ` //since 4.11.6: [W/L/M]`

`splitString(<string1>, <string2> `)` : stringlist [W/L/M]`

```
set $list1$ = splitString ("\\server\share\dir", "\\")
```

`splitStringOnWhiteSpace (<string> `)` : stringlist ` [W/L/M]`

`composeString(<string list>, <Link> `)` : string ` [W/L/M]`

`getValue(<key string>, <hash string list>) : string [W/L/M]`

`getValueBySeparator(<key string>,<separator string>,<hash string list>) : string //since 4.11.2.1 [W/L/M]`

`getSubListByContainingRegex(<pattern>, <target list>) : stringlist //since 4.12.1`

`getSubListByContainingRegex(<pattern list>, <target list>) : stringlist //since 4.12.1`

`getRegexMatchList(<pattern>, <target list>) : stringlist //since 4.12.1`

`getRegexMatchList(<pattern list>, <target list>) : stringlist //since 4.12.1`

`removeFromListByContainingRegex(<pattern>, <target list>) : stringlist //since 4.12.1`

`removeFromListByContainingRegex(<pattern list>, <target list>) : stringlist //since 4.12.1`

`stringReplaceRegexInList(<target list>, <pattern>, <replacement string>) : stringlist //since 4.12.1`

`editmap(< strlist> `) : stringlist` //since 4.12.1.2 [W/L/M]`

`areListsEqual(< strlist1>, <strlist2>, <flag> `) : boolean``

`GetSectionFromInifile(<ini-file> `) : stringlist` [W/L/M]`

5.23. Time / Date related functions [W/L/M]

`sleepSeconds <Integer> or <string> : noresult [W/L/M]`

breaks the program execution for <string> seconds. <string> has to represent an Integer Value

`markTime : noresult [W/L/M]`

sets a time stamp for the current system time and logs it.

`getDiffTimeSec : string (Time in seconds since last marktime) //since 4.11.3 [W/L/M]`

`timeStampAsFloatStr : string (Floating Number - format: 'days.decimal days') //since 4.11.6 [W/L/M]`

5.24. Usercontext / loginscripts related functions [W]:

`GetUserSID(<Windows Username> `) : string``

`GetLoggedInUser : string //since 4.11.1.2`

`GetUsercontext : string //since 4.11.1.2`

`GetScriptMode : string possible values 'Machine','Login' //since 4.11.2.1`

`saveVersionToProfile : noresult - save productversion-packageversion to local profile //since 4.11.2.1`

`readVersionFromProfile : string - read productversion-packageversion from local profile //since 4.11.2.1`

`scriptWasExecutedBefore : boolean - is true if saved and running productversion-packageversion are identical //since 4.11.2.1`

5.25. XML related functions (XML2) [W/L/M]:

`getXml2DocumentFromFile(<path to xml file> `)`` : xml2stringlist ` //since 4.12.1

`getXml2Document(<stringlist wit xml> `)`` : xml2stringlist ` //since 4.12.1

`xml2GetFirstChildNodeByName(<xml2stringlist>, <node name str> `)`` : xml2stringlist ` //since 4.12.1.

`getXml2UniqueChildnodeByName(<xml2stringlist>, <node name str> `)`` : xml2stringlist ` //since 4.12.1.

`getXml2AttributeValueByKey(<xml2stringlist>, <attr name str> `)`` : string ` //since 4.12.1.

`getXml2Text(<xml2stringlist> `)`` : string ` //since 4.12.1.

see also : [Section 4.11, “XML2 Sections \[W/L/M\]”](#)