

# WHITE PAPER

nextEDGE Technology, Inc.

## **Lightweight Management Console**

This whitepaper provides technical information about nextEDGE Technology, Inc.'s Lightweight Management Console.

Lightweight Management Console is new developed network management console to manage the SNMP and WMI device. Lightweight Management Console is the best lightweight and flexible management console in industry.

For more updated documentation and related information for Lightweight Management Console, please visit [www.nextEDGETech.com](http://www.nextEDGETech.com) web site.

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## Design Concept:

### ■ Light Weight

- Low resource usage
- Appropriate for SOHO and Groupware

### ■ Easy to use

- Windows GUI, use common usability design

- Tree in ListCtrl and Styled List provide user friendly navigation and look & feel
  - Device View, Event Notification View
  - Status Icons
  - Control navigation
- Browser like design
- Audio Support
  - Indicates Alert with audio sound
  - Indicates critical device with audio sound

- **LaunchPad Icon**

LaunchPad is designed to provide quick view of all managed device status, allow user to control managed device and allow user to launch device specific application such as Web based Management Agents from it

- Quick access to Device Detail view
- Device controls
  - Server reboot ( SNMP)
  - Shut down ( WMI )
  - WOL ( MagicPacket )
- Quick launch to HP Insight Agents Web page and others
- Works as alert and device status indicator
- Transform between Icon view and LaunchPad view
- Audio sounds
  - When receiving alert
  - When discovered critical device

- **Simple**

- Simple/quick installation

- **Flexible**

- User extendable design to manage various devices
- Multi-vendor, multi-device, multi-OS support

Devices such as Server, Note, Desktop HUB/Router, Printer, UPS and Network Storage

- **Multi-language support**

- Internationalized design
- English, Japanese UI support at initial release

**Key Technologies:**

- **XML**

By implementing XML parser facility, LMC has the following advantages:

Usage	Advantages
Collected device information and received events are stored in XML file	No database engine is required such as MSDE
All information to build user view are scripted in XML file	Provides flexibility and expandability for user's environment and purpose
Provides views using stylesheet for XML	View for device and event information can be transformed as viewer's preferences
String data definition	Easy to handle multi-language in single XML with utf-8 format

- **WinSNMP**

Usage	Advantages
SNMP Data collection, SNMP Trap receive	<ul style="list-style-type: none"> <li>● Allow customer to run other SNMP management console</li> <li>● ProLiant provides powerful management capability</li> <li>● Allow customer to run other SNMP management console</li> </ul>

- **WMI**

Usage	Advantages
WMI Data collection	<ul style="list-style-type: none"> <li>● Allow customer to manage device in higher security environment</li> </ul>

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• WMI provides various information via Windows system.</li></ul> |
|--|--|

- **ESMTP**

- ESMTP support is more important when using ISP's SMTP server

- **Windows GUI**

- Enhanced control of MFC class provides easy to use environment

## **Prerequisites & Restrictions**

### **Prerequisites**

- **Operating System**

- Microsoft Windows 2000 and XP

NOTE: No legacy OS support as running platform to run LMC

- **Additional components**

- WMI and SNMP installed and configured

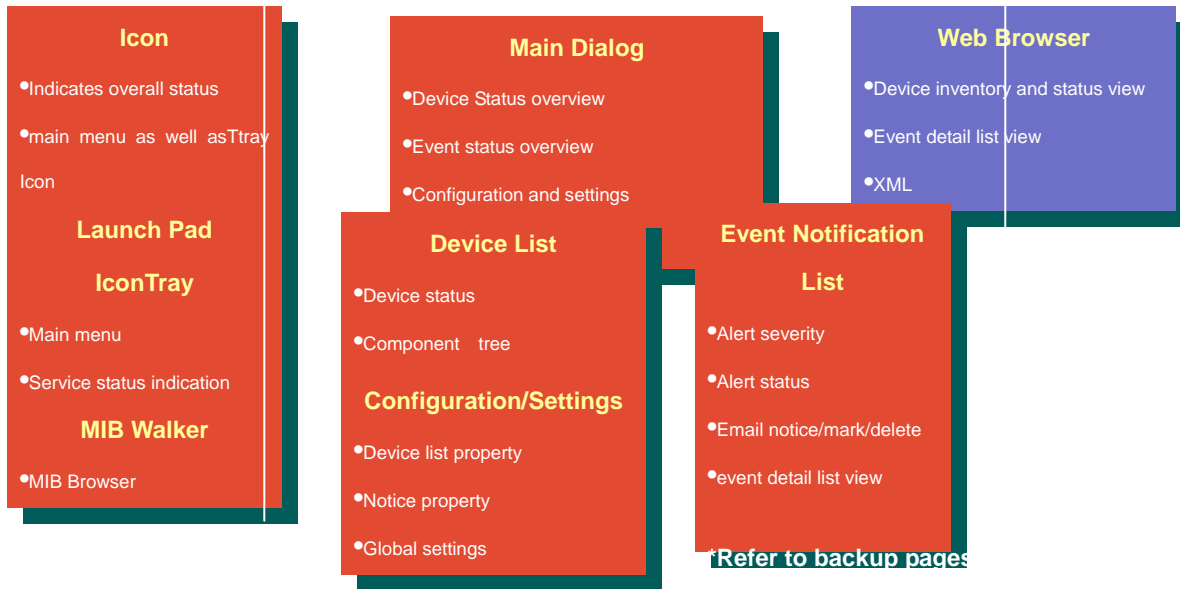
- **Recommended components at target managed device**

- Enable SNMP Agents comes with HW device (Such as HP Management Agents)

### **Restrictions**

- SNMP via IPX
  - Focusing on IP based networks only
- Auto Device Discovery
- Device's detail information/control
  - Use application comes with HW (Vendor)

## UI architecture



## Features

Key features	Description
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<p><b>UI design</b></p> <ul style="list-style-type: none"> <li>• Device View, Event Notification View</li> <li>• Status Icons</li> <li>• Control navigation</li> </ul>	<ul style="list-style-type: none"> <li>• Tree in ListCtrl and Styled List provide user friendly navigation and look &amp; feel</li> </ul> <p>Device View, Event Notification View</p> <p>Status Icons</p> <p>Control navigation</p> <ul style="list-style-type: none"> <li>• Browser like design</li> </ul>
<p><b>Audio Support</b></p>	<ul style="list-style-type: none"> <li>• Indicates Alert with audio sound</li> <li>• Indicates critical device with audio sound</li> </ul>
<p><b>LaunchPad</b></p> <ul style="list-style-type: none"> <li>■ Quick access to Device Detail view</li> <li>■ Device controls <ul style="list-style-type: none"> <li>• Server reboot ( SNMP)</li> <li>• Shut down ( SNMP )</li> <li>• WOL ( MagicPacket )</li> </ul> </li> <li>■ Quick launch to any web based configuration application comes with HW</li> <li>■ Works as alert and device status indicator <ul style="list-style-type: none"> <li>• Transform between Icon view and LaunchPad view</li> </ul> </li> <li>■ Audio sounds <ul style="list-style-type: none"> <li>• When receiving alert</li> </ul> </li> </ul> <p>When discovered critical device</p>	<p>LaunchPad provides facility for user to provide quick view of all managed device status and allow user to control managed device and allow user to launch device specific application such as Web based Management Agents from it</p>
<p><b>email notification</b></p> <ul style="list-style-type: none"> <li>• Supports ESMTMP (SMTP-AUTH with CRAM-MD5)</li> <li>• User able to customize the notification format (HTML)</li> <li>• Automatic sending received events</li> </ul> <p>Allow user to receive all traps or traps only from managed device</p>	<p>Email notification function provides automatic forwarding of any received alert to predefined user group.</p> <p>User is also able to filtering notifications depending on event's severity..</p> <p>At any time, user is able to send Device information or Event information of device to out side of user group such as technical support experts.</p>

<p><b>Scripting</b></p> <ul style="list-style-type: none"> <li>• User able to customize the script</li> <li>• Component, component's object</li> <li>• Icon for components</li> <li>• Predefined script XML is well designed for ProLiant servers</li> <li>• Threshold definition</li> <li>• Calculation and Referencing</li> </ul>	<p>LMC provides powerful scripting feature to define managed objects, user interface, user threshold.</p>
<p><b>MIB table xml</b></p> <ul style="list-style-type: none"> <li>• Provides translations</li> <li>• Provides alert detail</li> <li>• Defines alert's severity</li> </ul>	<p>LMC uses MIB objects defined in XML file.</p> <p>MIB XML table is generated from vendor MIB with the following additional information:</p> <ul style="list-style-type: none"> <li>• Language translation</li> <li>• Alert severity</li> </ul>
<p><b>Browser view</b></p>	<p>LMC also provides data view via browser.</p> <p>By using XML's style sheet feature, use is able to view device and event detail information in friendly format</p>
<p><b>Registering as Windows service</b></p>	<p>LMC also can be registered as Windows service. So that user is able to run it as background monitoring service.</p>

**Flexibility**

Key features	Description
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<b>XML style sheet</b>	<ul style="list-style-type: none"> <li>• Provides user friendly UI and navigation to read information stored in XML</li> <li>• Provides more styles per purpose ( fault investigation view, inventory view.. )</li> </ul>
<b>MIBTable.xml MIB database XML</b>	<ul style="list-style-type: none"> <li>• Defines MIB object information in original designed xml file</li> <li>• Provides severity, translation</li> </ul>
<b>Device inventory and status view/Event detail view</b>	<ul style="list-style-type: none"> <li>• Data view is provided by launching browser</li> <li>• View format is provided by xsl style sheet</li> <li>• Translation is provided by string ENTITY file</li> </ul>
<b>Email notice format</b>	User is able to customize email notice format using HTML

## Appendix A

### Supported device information

At this time, only following devices are supported for data collection.

User is able to add additional vendor and device support, by modifying default XML script files. See [Appendix B](#) for more information.

Vendor	Device	Note
Compaq	All servers	All Compaq SNMP agents running server
	IDE controllers	
	IDE fixed disks	
	ATA controllers	
	SCSI controllers	
	SCSI fixed disks	
	Array controllers	
Dell	All servers	All Dell SNMP agents running PCs
Linksys	Wireless HUB	SNMP enabled configuration
UPS	UPSD	SNMP enabled configuration
Printers		WMI enabled configuration

## Appendix B

### Scripting feature

This chapter describes scripting syntax currently used with LMC.

### Data collection

LMC uses SNMPconst\_data.xml and WMIconst\_data.xml file to collect monitored data. All SNMP objects to be collected should be defined in SNMPconst\_data.xml. All WMI objects should be defined in WMIconst\_data.xml.

Ex.

```
<system_info class="Win32_NetworkAdapter" groupname="WMI_NIC_group" name="NIC"
key="NIC_type;NIC_description;NIC_ipaddress;NIC_address;dhcp;dhcpserver;ipx;ipxaddress" type="2">
    <instance>DeviceID</instance>
</system_info>
```

NODE	Tag	Description
<system_info>		
Class=	WMI Class Name	class="Win32_NetworkAdapter" NOTE: Only used for WMI object
Groupname=	Group name	groupname="WMI_NIC_group"
Name=	Name in group	name="NIC"
Key=	Name list In the group	key="NIC_type;NIC_description;NIC_ipaddress;NIC_address;dhcp;dhcpserver;ipx;ipxaddress" NOTE: valueofXXX can be used for multiple references
type=		type = "2" : Group objects type = "1" : Single object with CDATA type = "0": Single object data type = "3" : Object in Group type = 4" : Group object without child object
list=		list="0" none list="1" evaluate object ( status object ) list="2" list as child object

		list="3" display object as group title list="4" used with type="4"
test=	Evaluate the value	test="&lt;20:2;&lt;10:3;&#61;0:1" If the value < 20 then Major If the value < 10 then Critical If the value = 0 then Normal

```
<system_info class="Win32_LogicalDisk" groupname="WMI_LOG_STORAGE_group" name="STORAGE" key="valueof"
type="3" list="0" test="&lt;20:2;&lt;10:3;&#61;0:1">
  <name lang="en">Free %</name>
  <name lang="ja">残り %</name>
  <valueof>STORAGE_free * 100 / STORAGE_size</valueof>
</system_info>
```

Node	Description	Example
<instance>	Target Instance Name	<instance>DeviceID</instance> NOTE: Only defined for WMI object
<name>	Display name	<name lang="en">Adapter Type</name> <name lang="ja">アダプタ タイプ</name>
<valueof>	Reference	<valueof>STORAGE_free * 100 / STORAGE_size</valueof>
<oid>	SNMP Object ID	<oid>1.3.6.1.2.1.6.13.1.3.</oid> NOTE: Only defined in SNMP object

```
<system_info class="Win32_LogicalDisk" groupname="WMI_LOG_STORAGE_group" name="STORAGE" key="valueof"
type="3" list="0" test="&lt;20:2;&lt;10:3;&#61;0:1">
  <name lang="en">Free %</name>
  <name lang="ja">残り %</name>
  <valueof>STORAGE_free * 100 / STORAGE_size</valueof>
</system_info>
```

## UI Table

LMC uses const\_data.xml to determine which collected objects will be displayed.

To customize UI to display, re-define node `<system_group_component_list>` in const\_data.xml

Node `<group>` is defined as the following:

```
<group
    key= Reference Key string for Node
    icon = Icon No#
    type = 0 List, 1 Column
>
Icon =
{ SERVER_ICON, CONTROLLER_ICON,
NETWORK_ICON,STORAGE_ICON,SYSTEM_ICON,SOFTWARE_ICON,ITEM_ICON,PRINTER_ICON,
UPS_ICON };
```

## Vendor Name definition

To allow LMC determine vendor information from collected SNMP information, add vendor definition in node `<vendor_list>`

```
<vendor_list>
  <vendor key="Compaq">SYSTEM_info_group/name</vendor>
  <vendor key="DELL">SYSTEM_info_group/dell_name</vendor>
  <vendor key="Linksys">Linksys_Info_group</vendor>
</vendor_list>
```

## Remote control

To define remote control via SNMP SET request, define the parameters in node `<controls_list>` as the following:

i.e

The following defines "Server Reboot" remote control when vendor is "Compaq", device is on-line and

SNMP object "reboot@" is available condition by sending value "8115" to oid "1.3.6.1.4.1.232.2.2.4.10.0".

```
<controls_list>
  <control key="8">
    <display lang="en">Server Reboot</display>
    <display lang="ja">サーバ再起動</display>
    <criteria value="Compaq">vendor</criteria>
    <criteria value="1">status@</criteria>
    <criteria value="2">CPQ_SYSTEM_Control_group/reboot@</criteria>
  <action if="SNMP">
    <oid>1.3.6.1.4.1.232.2.2.4.10.0</oid>
    <value>8115</value>
  </action>
</control>
</controls_list>
```

Appendix C.  
Screen samples



Lite Management Console - Main

Last Updated: 12/13/2003 17:58:00

Device Status Icons: 4/7 (Info), 3/7 (Success), 0/7 (Warning), 0/7 (Error)

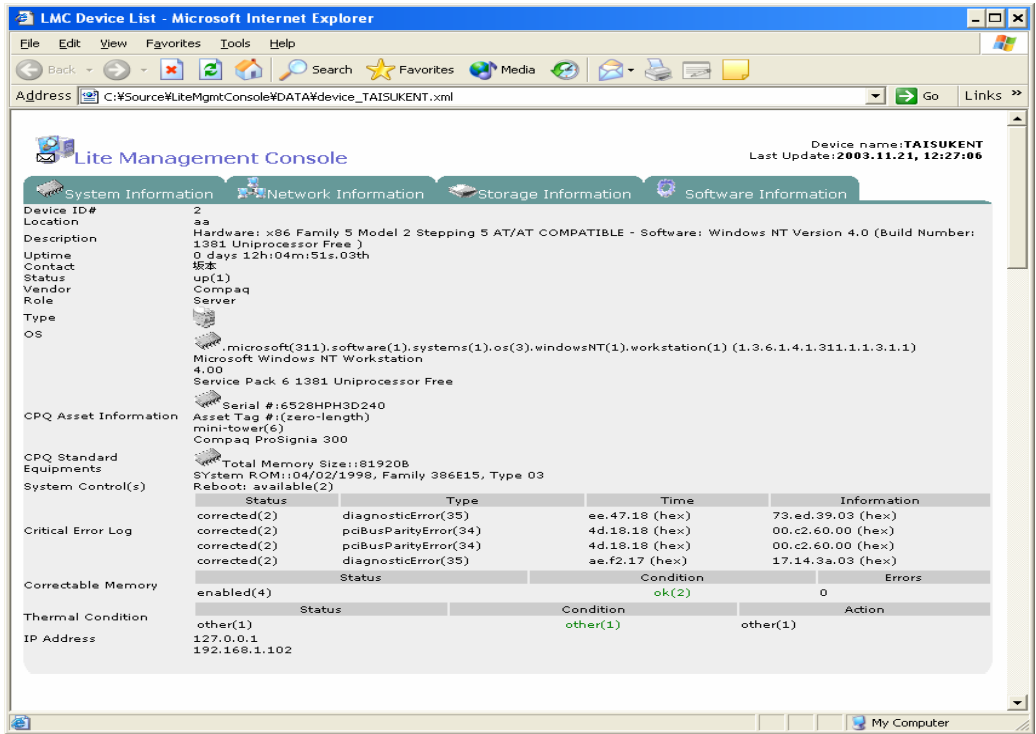
Notice Status Icons: 10/13 (Info), 3/13 (Warning), 0/13 (Error)

Control: [Help] [Refresh] [Print] [Log Out]

Device List | Notice Log

Device/Components	IP Address	Link Status	Management I/F	Location	Contact	Vendor	Uptime	Role	Description
down-server	<a href="#">192.168.1.99</a>	down(0)	SNMP					Server	
HIROKOS-DELL	<a href="#">192.168.1.100</a>	down(0)	SNMP	Home	Hirokos		0 days 00h:05:...		Hardware: x86 Family 15 Model 2 Stepp
iv-server.houston.rr.com	<a href="#">192.168.1.2</a>	up(1)	SNMP	-	Linksys	Compaq	24 days 07h:1...	Server	BEFSR81
Linksys	<a href="#">192.168.1.1</a>	up(1)	SNMP	Home	Sakamoto	Linksys	-27 days -19h:...	Router	Linux (none) 2.4.5 #466 Thu Jul 3 22:16
TAISUKENT	<a href="#">192.168.1.102</a>	down(0)	SNMP	aa	坂本	Compaq	0 days 04h:01:...	Server	Hardware: x86 Family 5 Model 2 Steppir
TAISUKES-EVO	<a href="#">192.168.1.101</a>	down(0)	SNMP			Compaq		notebook	Taisuke Sakamoto evo N620c
TAISUKES-XP	<a href="#">192.168.1.10</a>	up(1)	SNMP & WMI	Home	Taisuke Saka...	Compaq	0 days 03h:42:...	Desktop	Taisuke's computer
System Information									
OS Name	OS ID	Description							
OS Information	OS Name	Build#	CSDVersion	Serial #					
Installed Software Information	Vendor	Version							
Running Processes Information	Version	Size							
Memory Information	Total Physical Memory	Total Virtual M...	Total Page ...	Available V...					
	261552	893520	631968	387724					
BIOS Information	Base Board Serial N...	Version	SMBIOS Ver...	Manufacturer					
	R24SCCF20004	CDMPAQ - 20020...	686Y2 v2.11	Compaq					
Event Log Messages	Type	Source name	Logfile	Description	Type ID				
Network Subsystem									
Network Interface	IP Address	Media Type	speed	MAC address	staus				
Network Interface	Adapter Type	IP Address	MAC address						
UPD port(s)	port								
TCP port(s)	port								
Storage Subsystem									
UPS									
UPS Product Information	Manufacturer	Model	Battery Con...	Battery Sta...	Charge	Battery Po...	Estimated ...	Estimated ...	Capacity(%)
	Belkin Components	F6C800JUNV	good(0)	ok(0)	charging(1)	0	0	0	100
UPS Settings	Attached Devices	Output VA	Output Volt...	Output Fre...					
	(zero-length)	800	0	120					
Printer(s)									
Printer Information	Capability	Shared	Shared Name	Status	Port				

Lite Management Console



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