LifeKeeper® for Windows
Module 3: Configuration
Learning Objectives

At the end of this module, you will understand:

- How to use the LifeKeeper® GUI client to configure and monitor various aspects of clustered nodes.
- How to configure and run the LifeKeeper® GUI client from a remote system.
- Permissions associated with each LifeKeeper® GUI role.
- How to configure LifeKeeper® GUI roles in a workgroup or domain.
- Communication path types and properties.
- How to create, delete and view communication paths.
- How to tune communication paths for WANs.
GUI communications:
- Utilizes first NIC in binding order
- Momentary failure of primary NIC, cable or switch port may cause GUI to stop updating

Administration privileges:
- When running in “Admin only” or Administrator mode, the LifeKeeper® GUI client utilizes the local administrator account on each server or a domain user account with local administrator privileges.

Logging In:
- Domain name may be required with user name (domain\user)
- If the administrator account or password is different for each server in the cluster, login to each server is required
GUI Server Component:
- Runs on each server in the cluster (part of core LifeKeeper® product)
- Communicates with LifeKeeper® core via JNI (Java Native Interface)
- Communicates with the client via RMI (Remote Method Invocation) over port 82 (default)

GUI Client Component:
- Runs as a Java application on the Windows Server where LifeKeeper® is installed
- Runs as an applet invoked from a Java-enabled web browser
Run the GUI client as an application on a LifeKeeper®-protected server:

- GUI client and server on same system
- Start > All Programs > LifeKeeper > LifeKeeper (Admin only)
- Cluster Connect dialog appears

Run the GUI client as an applet:

- Requires installing Java Runtime Environment, even on LifeKeeper®-protected server
- Runs in web browser
- Start > All Programs > SteelEye > LifeKeeper > LifeKeeper
  or
- http://<hostname>:81
Browser Security Parameters

Internet Explorer:
- <Tools> <Internet Options>
- Select Advanced tab
- Confirm that “Use JRE <version number> for <applet> (requires restart)” under “Java (Sun)” item is checked

Mozilla FireFox:
- <Tools> <Options>
- Go to Content category
- Select the “Enable Java” and “Enable Java Script” options.
## GUI Roles

<table>
<thead>
<tr>
<th>Task</th>
<th>Permission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connect to and disconnect from servers</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
<tr>
<td>View servers and resources</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
<tr>
<td>View server properties and logs</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
<tr>
<td>View resource properties</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
<tr>
<td>Put resources into and out of service</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
<tr>
<td>Modify server properties</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
<tr>
<td>Create and delete comm paths</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
<tr>
<td>Create and delete resource hierarchies</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
<tr>
<td>Extend and unextend resource hierarchies</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
<tr>
<td>Create and delete resource dependencies</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
<tr>
<td>Modify resource properties</td>
<td>Guest: X   Operator: X Administrator: X</td>
</tr>
</tbody>
</table>
Configuring GUI Permissions

In a workgroup:
- assign users to local user groups on each server
- local Administrators group have LifeKeeper Administrator permission
- local LK_OPERATOR group have LifeKeeper Operator permission
- local LK_GUEST group have LifeKeeper Guest permission

In a domain:
- create the LK_OPERATOR and LK_GUEST groups as Global Security groups within the domain
  - Assign domain users to one of these groups

Custom group names can be configured:
- Modify the following file on each cluster member:
  
  C:\LK\htdocs\com\steeleye\LifeKeeper\locale\Server_RB_en.properties
**Other GUI Tasks**

**Viewing Server Properties:**

- **General tab**
  - Current state of server (Alive/Dead/Unknown)
  - Permission level
  - Shutdown Strategy
  - Checkboxes that allow control of failover behavior

- **CommPaths tab**
  - Priority
  - State (Alive/Failed/Unknown, etc.)
  - Type
  - Address/Device

- **Resources tab**
  - Information and/or control over the specific resource
Other GUI Tasks

Viewing Log Files:

- Log entries are retrieved from the Windows Application Event Log
- Log Size: Choose how much data you wish to view:
  - Updates Only - This displays only those messages that have been generated since you opened this dialog.
  - Last 100/500/1000 lines - These options let you choose to view the most recent 100, 500, or 1000 messages in the log.
Other GUI Tasks

Viewing GUI Message History:

- Displays a history of the messages displayed in the message bar
- Maximum of 1000 lines
- New messages will "push out" the oldest messages

Format:

- <-- indicates that the message is incoming from a server
- --> indicates that the message is outgoing from a client
- Example:
  
  `<-- SERVER1: Updating system list at: Tue Jun 17 19:25:57 PDT 2008`
Applet versus Application:

- Application may run only on a Windows Server with LifeKeeper® installed and licensed
- Application supports only Administrator privileges
- Application uses locally-installed JAR files
- Applet does not require installation of LifeKeeper® packages on the client
- Applet allows client independence
  - Java-enabled Internet Explorer or Mozilla Firefox on a Windows, Unix, or Linux client
- Applet supports Administrator, Operator and Guest privileges
- Applet downloads JAR files on the fly
Communication Path Configuration

Communication Path Functions:
- Defines a cluster
- Heartbeat signalling between systems
- Inter-node communications

Best Practice:
- Two communication paths are recommended between each node in a LifeKeeper® cluster

Communication Path Types:
- TCP/IP - utilizes a network connection (multiple)
- TTY - utilizes a serial port connection (one)
- Shared Disk - utilizes an unformatted disk partition (multiple)

Communication Path Priorities:
- TCP - priority from 1-99 (1 is the highest)
- TTY - always defaults to the lowest priority (no configurable priority)
- Shared Disk
Redundant Communication Paths

Split Brain:

- Can occur when only a single communication path has been configured
- Behaviour:
  - Communication path fails
  - Multiple systems bring resources in-service
- Prevented by defining multiple communication paths or by configuring server failover properties
- Shared disk communication path helps
Create a Communication Path

Fields required for all communication paths:

- Local Server
- Remote Server(s)
- Device Type: TCP/IP, TTY or DISK
- Priority: 1 to 99
- Heartbeat Interval: (default = 6)
- Maximum Heartbeat Misses: (default = 5)
To view communication path status:

- Edit > Server > Properties
- Right click on a server icon and select the “Properties” menu item
- Select the CommPaths tab
Delete a Communications Path

Modifying communication path properties:

- Communication path properties cannot be modified
- The communication path must be deleted and re-created.

Deleting a Comm Path:

- <Edit> <Server> <Delete Comm Path>
- Select the communication path(s) from the list and click Next
- Review the communication paths that will be deleted and click Delete Communication Path(s)
- Click Done
TCP Communication Path

Setup:

- Ethernet cards on the systems
- IP addresses for each system
- Two networks are recommended:
  - Private NIC for LifeKeeper® related communication and, if required, data replication
  - Public NIC for client traffic
    - Use as a secondary communication path
- Different communication paths should not be on the same sub-net
- Verify the network is functional before starting the communication path configuration
- No need to define private NIC in local hosts file or DNS

Additional fields required for TCP communication path:

- Local IP Address(es)
- Remote IP Address(es)
- Port Number
TTY Communication Path

**Setup:**

- Requires a null modem cable
- One TTY communication path is allowed between systems
  - Useful only in two node clusters

**Additional fields required:**

- Local TTY Com Port
- Remote TTY Com Port
- Baud Rate
Shared Disk Communication Path

**Setup:**
- Create small disk partition using Disk Management tool
- Do not format the partition
- Assign a drive letter

**Additional field required:**
- Drive Letter
Tuning Server Failure Detection

- **Best Practice:** accept default values for Heartbeat Interval (6 seconds) and Maximum Heartbeat Misses (5).
- For each communication path type, values for Heartbeat Interval and Maximum Heartbeat Misses MUST be the same on all servers in cluster.
- Setting values too high can prevent LifeKeeper from detecting failures.
- Heartbeat interval should not be less than 5 seconds unless using private network (network interruptions can cause false failovers).
- Adjust both properties accordingly for WAN configurations.
Module 3 Lab

Lab
LifeKeeper Configuration