# NuDesign's Visual Tools for CLI Development

A **Command Line Interface (CLI)** is an embedded application used for accessing devices from a console, either locally or through a network connection. NuDesign provides its highly automated CLI Builder Studio for Embedded RTOS, containing CLI SDK libraries and Visual CLI Builder code generation wizard for developers of CLI agents for embedded OS / RTOS'es such as QNX Neutrino®, WindRiver VxWorks, numerous Linux distributions, Microsoft embedded OS'es, ENEA OSE and others.

NuDesign's CLI solution can operate as the only management agent for the embedded device or if deployed with NuDesign's SNMP Agent it also provides access to SNMP MIB(s) objects via use of Get / Set keywords identifying MIB objects by their name or OID value (please see Product Brief for NuDesign's SNMP Agent generation tools). Future releases of CLI Builder Studio will include an optional component for supporting IETF's NetConf protocol used to install, manipulate, and delete the configuration of network devices.
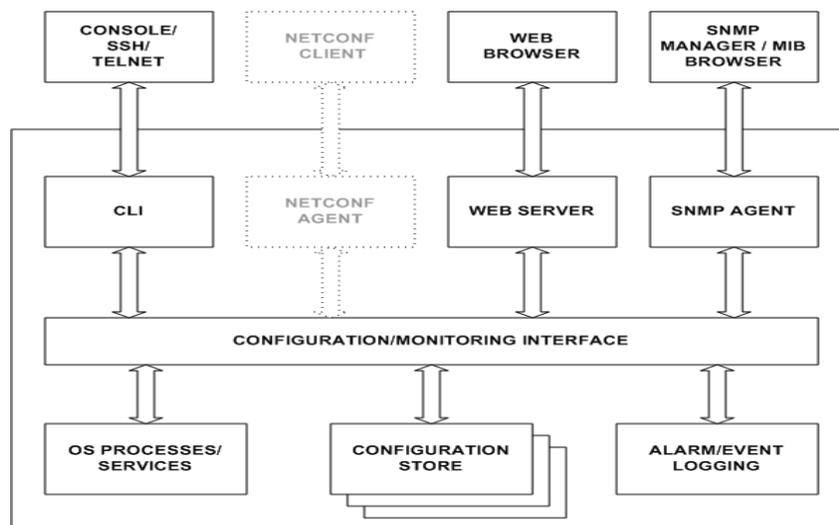
The NuDesign CLI is a command shell that runs on top of a (RT)OS's command shell. Commands are executed when the user presses the Enter key. The NuDesign's CLI framework provides command help, command completion, and also provides keyboard sequences for moving around on a command line including scrolling through recently executed commands.

The CLI has two modes: *operational* and *configuration*. Generally speaking the operational mode is designed to offer a non-privileged access; there should not be anything a user can type that would impact the operation of the device. By contrast, the configuration mode allows all aspects of device operation to be modified.

CLI commands are organized in a hierarchy. Commands that perform similar functions may be grouped together under the same branch of the hierarchy. For example, all commands that display information about the system and the system software could be grouped under the "show system" command.

The NuDesign CLI Builder Studio for Embedded RTOS simplifies creation of hierarchical CLI. The framework implements command hierarchy navigation, command completion, command line editing, history and provides a basic set of common commands. It is designed to enable a developer to create a Cisco-like or Juniper-like CLI interfaces. It is very easy to extend this CLI with custom commands and device configuration in a few simple steps:

- Generate CLI hierarchy XML definition file (using visual editor or manually)
- Run NuDesign's CLI code generator using generated hierarchy and produce CLI project
- Implement custom "command handler" and "validator" methods.
- Compile and run custom CLI
- Configure console, serial, Telnet or SSH access, depending on needs and system capabilities

For information and product evaluation kit please contact NuDesign at contact@ndt-inc.com

About NuDesign Technologies

NuDesign Technologies, Inc, headquartered in Toronto, ON, Canada, specializes in providing Visual SNMP, CLI, web/XML manager & agent development applications, tools, libraries and consulting services, products such as SNMP & CLI Agent / Manager code generators, MIB Builders, MIB Browsers, MIB Compilers, SNMP Traffic Monitors and C++ SNMP Development Libraries with SNMP Controls to developers worldwide.

The benefit of deploying NuDesign's management software technologies are reliable, low risk, and quick-to-market solutions, supporting SNMPv3 over IPv4 / IPv6 networks, web protocols and serial, CLI command line access. The highly automated SNMP and CLI Agent & Manager tools with associated tutorials enable fast prototyping and development, facilitate organization and design process while supporting multiple target environments with generation of very complete and ready to build SNMP and CLI Agents & Managers.

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