

CorpsLON History & Big Picture



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of Engineers

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August 2008

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What is CorpsLON?

- The flat, Open, LNS-based LonWorks system defined by UFGS 23 09 23 and UFGS 25 10 10 and including all LonWorks requirements of these specifications.
- The flat, Open, LNS-based LonWorks system defined by the MILCON Transformation Model RFP.
- “The US Army Corps’ Open implementation of LonWorks”



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What's The Problem?

Multi-vendor DDC is inevitable due to the Government's competitive procurement rules.

- Multi-vendor DDC results in multiple software tools, laptops, and dongles
- Proprietary supervisory architecture
- Varied & incompatible building systems
- Non-interoperable systems
- Overall... a great deal of complexity and significant challenges for O&M staff, construction inspectors, and end users



Fort Bragg's 12 O&M laptops (and counting)

History

- HQUSACE says "we're tired of proprietary systems so rewrite the specs and fix it"
- CERL with HNC and SAS investigate options for Open systems (particularly BACnet®) and choose LonWorks®:
 - Easier to get Open system
 - End system more Open
 - End system easier to use/maintain

HQUSACE: Headquarters U.S. Army Corps of Engineers
CERL: Construction Engineering Research Laboratory
HNC: Huntsville Engineering Support Center
SAS: Savannah District



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What is Open?

- An Open DDC system is characterized by the ability for any qualified entity to readily modify, operate, upgrade, and perform retrofits on the system. An Open system:
 - Permits multiple devices from multiple vendors to readily exchange information
 - Provides the capability to easily replace any device with another device procured from multiple sources
 - May have components available from only one manufacturer, but they represent a small percentage of the overall device
 - May have fees associated with the use of certain components, as long as the fees are established and consistent
- The opposite of Open is Closed, or Proprietary as defined by Government procurement rules (can only buy from 1 vendor)



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Open System Goal

(one-line version)

“One (integrated, multi-vendor) system with no future dependence on any one contractor or controls vendor.”



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Open System Goals

1. *One system*. Multiple buildings with controls installed by multiple vendors are integrated into one system.
2. *One common front-end* that provides users with the capability to interface with all buildings (monitoring, supervisory control, etc.).
3. *One common tool* for network management and device configuration. One common tool for device programming would be great!
4. *No future need for* the original (installing) contractor or any particular device manufacturer. Additions, modifications, and retrofits can be easily (without significant additional cost) made to the system without dependence on the original contractor nor require substantial engineering or other technical development.



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“But you can’t get that..”

We know.

**But Openness isn’t all or nothing, so let’s
get as close as we can!**



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Specification Overview / Philosophy

- “Unbundle” building systems from the front-end:
 - Building can run “stand-alone” with little/no user interface (Local Display Panels and Hand-Off-Auto only)
 - Provides clear demarcation of responsibility
 - Helps keep the “fox out of the henhouse”
- Use standards when possible but extend standards via prescriptive specification when necessary
- Be performance-based when possible, prescriptive elsewhere
 - How do you write performance requirements for “Open”?
(hint: you can’t – or at least you can’t enforce it)
 - Most/all of LonWorks requirements are prescriptive



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Specification Overview / Philosophy

- “Cooperation” between contractors is via spec requirements and submittals
 - Contractors DON’T need to work together
 - Contractors DO have to follow the specs
- Government owns the system: *“The building automation system shall be open in that it is designed and installed such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without further dependence on the original Contractor.”* (RFP)

“WE REALLY MEAN IT THIS TIME”



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Terminology

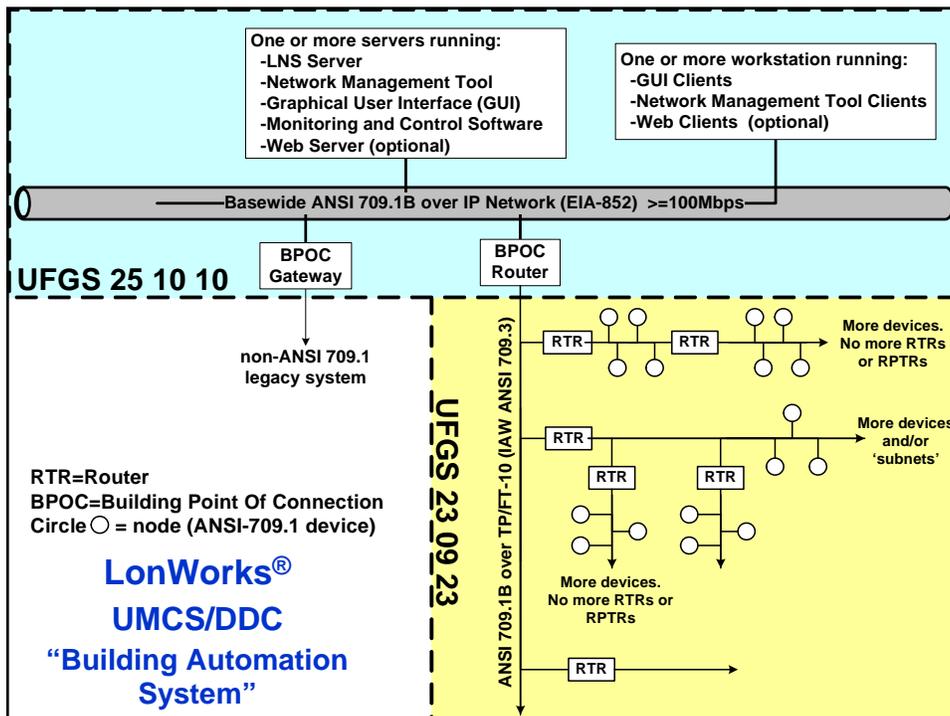
- **DDC:** Direct Digital Control
 - Building-level control system & components
 - Building Control Network (BCN)
- **UMCS:** Utility Monitoring and Control System
 - Central supervisory monitoring and control system
 - Desktop computer(s) interfaced to building-level DDC systems
- **BAS:** Building Automation System
 - UMCS and DDC system combined



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Specification Status

- MILCON RFP: Last revision November 2007, minor revision in progress
- UFGS 23 09 23 (DDC) and UFGS 25 10 10 (UMCS)
 - Released as 15951/13801 in 2004
 - Major revision in progress
- UFC 3-410-02FA (DDC) & UFC 3-401-01FA (UMCS)
 - Designers guide for the specifications
 - Draft online at <https://eko.usace.army.mil/fa/bas/>
 - Currently in release process
- Template Drawings
 - Available at <https://eko.usace.army.mil/fa/bas/>



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