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# СИСТЕМЫ УПРАВЛЕНИЯ

## Руководство пользователя

### на Experion LX

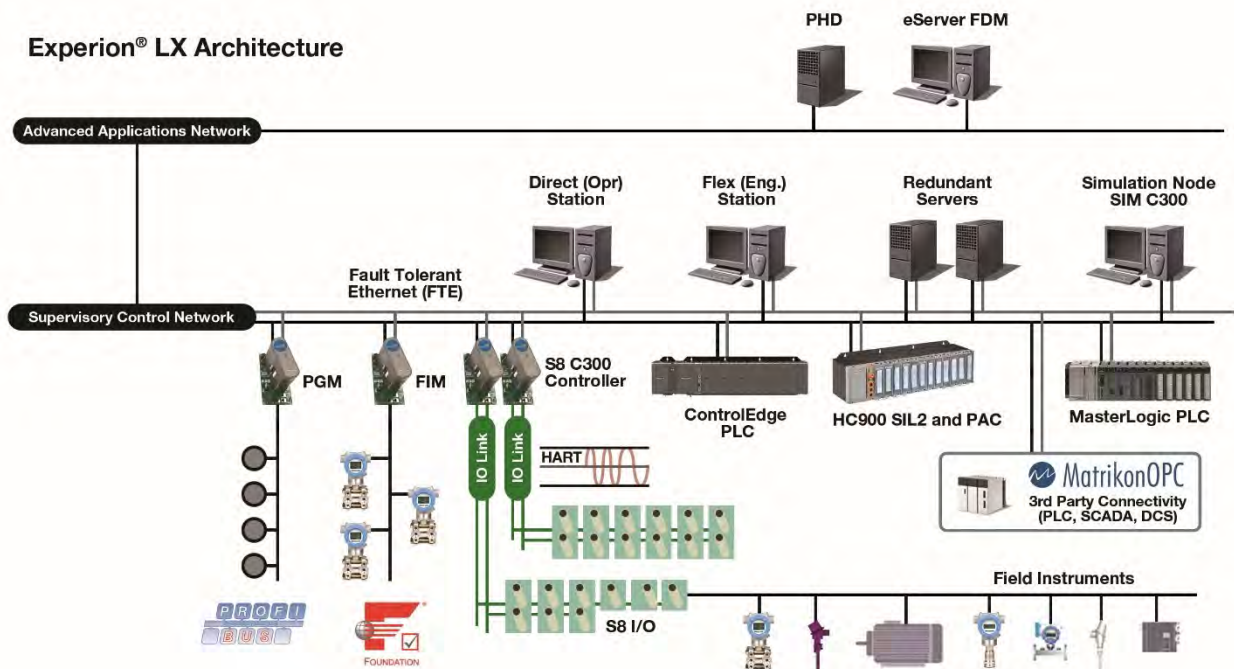
# 1. Introduction

## 1.1. Experion LX System

The Experion LX is Honeywell's unified control system for process, business, and asset management that helps industrial manufacturers increase their profitability and productivity and accessibility to local support without sacrificing quality and reliability in an increasingly competitive environment. Experion takes customers beyond distributed control system (DCS) functionality with an advanced automation platform solution and innovative application integration to improve business performance and peace of mind.

As a member of Honeywell's Experion family, Experion LX is designed to fit the varied application needs of customers across verticals through integrating state-of-the-art technology from the award-winning Experion Process Knowledge System (PKS) with innovative design of Series 8 I/O modules and cabinets. Validated wider range of COTS options, easier engineering and maintenance capabilities, and integrator-friendly programs and tools help Experion LX to provide lower total cost of ownership for customers.

## 1.2. Architecture Overview



The Experion LX system comprises several different integrated hardware and software solutions depending upon the needs of the application. The architecture above represents a subset of the possible nodes and controllers. Note that Experion LX architecture is highly scalable and not all nodes and controllers shown here are necessary or required.

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### 1.3. Experion HMI Overview

The Experion LX HMI consists of an optionally redundant set of servers where each server or redundant server pair supports a number of connected Stations. Such Experion LX systems can be integrated with other Experion systems using Experion Distributed System Architecture (DSA).

### 1.4. Experion LX Station

The Experion LX Station is the human-machine interface (HMI) that can be used for different functions around a process, plant or mill including operations, monitoring, maintenance, and engineering.

There are two types of Experion LX Station available to satisfy a broad range of architecture needs. A mix of Experion Station types can be implemented to provide the most appropriate, site-specific solution possible.

Both Experion LX Station types use the same operator interface and other features for consistent operation regardless of type. This also means that configuration is simplified as custom displays, trend sets, etc. are configured once and then available across the various types of Experion LX Stations. All types host the Configuration Studio Experion engineering tool. Each Experion Station type has additional functionality as described in the following tables.

Experion LX Station – Flex	
<b>Description</b>	Experion LX Flex Station is a versatile operator interface that uses an efficient caching mechanism to present process data to the operator. It is suitable for full-time operations and can also be used as engineering or wireless Stations
<b>Details</b>	<ul style="list-style-type: none"><li>LX Flex Stations can be configured with a static or rotary connection. The static connection provides a permanent, dedicated link. The rotary connection provides an “as required” connection, enabling numerous casual users to access the Experion LX system as needed, which is advantageous from a licensing point of view. For example when 5 Station connections are configured, 5 connections can be established at one time but the software could be installed and be available for use by many more than 5 individuals.</li></ul>

Experion LX Station – Direct	
<b>Description</b>	Experion LX Direct Station provides direct access to process data, alarms and events from control sources such as Series 8 C300 controller, Fieldbus Interface Modules (FIM), and IO Link Interface Modules (IOLIM). This provides a high-availability operations platform for critical processes.
<b>Details</b>	<ul style="list-style-type: none"><li>The LX Direct Station connected to the Experion Server for communication to SCADA and DSA point sources, system history, the system event journal, and the system configuration file server.</li><li>The LX Direct Station supports the implementation of a “logical console”. This allows operators to fully respond to all alarms/events within their scope of responsibility regardless of operator actions on other consoles; providing a single work space for an operator for event handling, alarm acknowledgement, alarm silencing, display manipulation and other functions</li></ul>

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## 1.5. Experion LX Server

A server or redundant server combination functions as a system-wide historian and global database. The Experion Server also supports communication to SCADA point sources, DSA point sources, OPC clients/servers and holds the system event journal, system configuration files, custom applications and server scripts. The server is the source for data, alarms, events, etc. for the client-connected applications and the Experion LX Station–Flex. One or more Experion Servers are required for an Experion LX System.

Experion LX Server can also be used as an operator or an engineering station. For redundant Experion LX Server system it is recommended to use the backup Server as the engineering station.

## 2. Experion LX Specifications

### 2.1. Database and Station Sizing

Limits shown here apply to the number of Station supported for a single Experion LX Server. Multiple Experion LX Servers can be combined into a single operational system using DSA.

Items per Experion LX Server	Standard Capacity System	High Capacity System	Comments
Number of Flex Stations	5	10	
Number of Direct Stations	10	15	
Total Server Points	13,000	1,67,000	Sum of Process, SCADA, Equipment, DSA and non-CEE points
Number of Process Points	8,000	10,000	Any device that uses the Control Data Access (CDA) interface consumes process points, like S8 C300
Number of SCADA Points	4,000	50,000	Any points that are used to display data retrieved from SCADA Interfaces are classified as SCADA points. Examples of these devices include the Modbus TCP/IP, DNP3 Protocol Interface
Number of Equipment Points	1,000	2,000	Other points and hardware items built as part of the equipment still contribute to their own relevant capacity constraints.

Number of DSA Points	0	1,00,000	DSA Points are created whenever a point that belongs to another server is accessed using DSA. DSA Points are not licensed on the server that is subscribing to the points.
Number of non-CEE Points	0	5,000	Total Non-CEE Points Published from SM to C300 Controller
System-wide Equipment Points	5,000	10,000	If a server is subscribing to other servers via DSA, the total of all remote equipment and local equipment points cannot exceed this number.
PSA (Point Server) Points	No overall limit		The PSA point count is an aggregation of points from point server interfaces such as SPS/Adv OPC /BMA etc. Each interface may have its own limits but the overall PSA count will count against the total point count limit for a server
EFM Meters	2,000	2,000	Used to collect and export custody transfer data. An EFM meter uses one SCADA point license.
SCADA Point Algorithms	50,000	50,000	Algorithm blocks can be linked to SCADA points
Maximum number of C300 controller per Server	50	50	
Maximum number of SCADA channels	20	99	Channels typically represent a physical connection to a device, such as a device connected to one port of a terminal server. A channel can support more than one Remote Terminal Unit (RTU).
Maximum number of SCADA controllers	50	999	This is the maximum number of RTUs for a given server. It is spread across all channels and includes OPC RTUs to support the OPC client interface

Maximum number of User Defined Scanned Parameters per Analog or Status SCADA Point2	200	200	Analog or Status type user defined scanned parameters (UDSP) may be added to Analog and Status SCADA Points in any combination up to a combined total of 200 UDSP per point. Alarming on user defined scanned parameters is not supported.
Maximum number of scanned parameters per server	100,000	100,000	This includes fixed scanned parameters (such as PV, SP, OP, A1 – A4), user defined scanned parameters (UDSP), and any parameters configured with a 0 second or DEMAND scan period
Maximum pps from all configured SCADA devices	Limited by device	Limited by device	

## 2.2. Alarm, Event, Alert, Message Lists

Items	Specification	Comments
Maximum number of active alarms	4,000	Every alarm and event that occurs is saved in the online event database for a configurable period.
Maximum number of active messages	1,000	Number of messages that appear in the Message summary. Messages can be generated to provide additional information to an operator; for example, when a point goes into alarm, a message can provide an explanatory note or a procedure.
Maximum number of SOE messages	32,767	Number of SOE messages that can appear in the SOE summary.
Maximum number of events in online event file	1.2 million	<ul style="list-style-type: none"> <li>All alarms, login actions, operator actions, and configuration changes are logged in the online event file.</li> <li>Up to two events are generated for every alarm, including one event for entering the alarm condition and one for return to normal.</li> </ul>
Maximum number of Printer connections	20	This is the total number of printers that can be configured as either report or alarm devices

## 2.24. Experion Backup and Restore

Items	Specifications
<b>Description</b>	
Starting release R511, Experion LX supports using Experion Backup and Restore (EBR) for creating backup and restoring Experion HS nodes from the EBR created backup.	
<b>Details</b>	
<ul style="list-style-type: none"><li>• Experion LX is qualified with EBR R520 Physical Edition that is used for backup and restore of Physical platforms. EBR R520 package consists of Workstation and Server Agents, node-specific files, Recovery Disk, Management console, and a Manager component.</li><li>• The EBR Management console is used to manage local and remote machines located in the same network. For installations with higher than 4-5 Experion LX nodes, it is recommended to run EBR management console on a separate server grade machine. EBR Management Console comes with the base EBR R501 media kit package and not separately licensed.</li><li>• For more details, refer EBR Specification document- EP03-240-520</li><li>• EBR R501 and R520 both supports Experion LX R520. However we recommend users to use the latest EBR R520.</li></ul>	

## 2.3. Station Display Sizing and Performance

Station Display Performance Specifications	Specification
<b>Display Parameters</b>	
Number of dynamic parameters per display	600 or fewer
Number of dynamic parameters currently in view on a pan and zoom display <sup>1</sup>	600 or fewer
Number of parameters per second (pps) per Station computer <sup>2</sup>	1000/sec
Number of dynamic parameters per Station computer	1,200 or fewer
<b>Display Updates</b>	
Maximum Display Update Rate <sup>3</sup>	1 second
Typical field change to display update time with 600 or less parameters per display	< 2 seconds
Typical complex display call up time with 300 or less parameters <sup>4,5</sup>	< 1.5 seconds
Typical complex display call up time with 600 or less parameters <sup>4,5</sup>	< 2 seconds
Standard Faceplate Call Up Time	< 2 seconds
<b>Equipment Display</b>	
Maximum number of Equipment Summary Display tables expanded simultaneously in a cluster	50
Maximum number of System Status Dashboard shapes per Dashboard	48
<p>Note 1 – A single overview display with a maximum size of 2000 dynamic parameters is supported if the High Capacity platform is used</p> <p>Note 2 – When more than 1,200 dynamic parameters are configured, the update rate must be greater than 1 sec. to not violate max pps</p> <p>Note 3 – The recommended continuous display update rate is 4 seconds.</p> <p>Note 4 – Call up time depends on display complexity: specification is based on a non-complex custom display using standard HMIWeb Display Builder objects with limited use of scripts. This excludes the first initial call up and is based on a client node running a single instance of Station.</p> <p>Note 5 – Complex displays are defined by the number of data bound objects identified, large amount of total objects on the display, and some amount of scripting.</p>	



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## 2.4. Enterprise Model Sizing

### 2.4.1. Assets

Items	Specification	Comments
Assets	1,000	The asset model represents the organization of items in the enterprise, for example, process units, individual pieces of equipment or facilities, etc. The relationship or hierarchy between assets and entities forms the asset model. The primary relationship in the asset model is that of asset containment, where one asset contains another.
Assignable assets	1,000	Assignable assets provide a way to assign assets to an operator's scope of responsibility. An assigned asset includes all asset children of the assigned asset including any points associated with those assets or any alarm groups that have been designated by that asset for scope of responsibility purposes. The number of assignable assets is a subset of the total number of assets.  Only 500 for Standard Capacity System
Nesting depth for asset hierarchies	10	
Children per asset	No Limit	These totals are still subject to the overall maximum number of events per second and maximum burst of events limit that the Experion LX Servers can support.

### 2.4.2. Alarm Groups

Items	Specifications	Comments
Alarm groups	1000	Alarm Groups present alarm state/status for a disparate group of points and assets that are not represented by a single asset in the asset model.  Only 500 for Standard Capacity System
Children per alarm group	500	
Nesting depth for alarm group hierarchies	5	
Maximum number of system alarm groups defined in a system	200	

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## 2.5. Station Multi-Window Functionality

Multi-window functionality is a purchased option for the Experion LX Flex Station and is standard for the Experion LX Direct Station. A multi-window Station uses SafeView to manage the placement of its windows.

Specification	Specification
Number of monitors	Up to 4
Number of windows <sup>1</sup>	Up to 16
Number of concurrent faceplates	Up to 8
Note 1 – Number of windows includes faceplates, custom displays, Experion System displays etc. For backward compatibility reasons, the multi-window option for ES-F supports the configuration of multiple instances of Station (Multiple Static Station Option) as an alternative to a multi-window implementation.	

## 2.6. Station Trends

Item	Specification	Comments
Trend pens per set	32	Trends can be preconfigured or configured online as necessary by browsing the database and selecting the desired point and parameter
Trend periods	1, 5, 20 minutes <sup>1</sup> , 2, 4, 8, 12 hours <sup>1</sup> , 2, 5 days, 1, 2, 4 weeks 3, 6 months, 1 year	Any of the standard history collection intervals may be used as the basis for the real-time and historical trends.
Number of operating groups	16,000	
Points per operating group	8	Each group has three standard views available including faceplate, group trend (with control parameters accessible) and numeric trend.
Number of Trend Sets	3000	Per Experion LX Server
<b>Trends on custom displays performance specifications</b>		
Item	Specification	
<b>On a Single Display</b>		
Maximum number of full trends <sup>1</sup>	1	
Maximum number of basic trends <sup>2</sup>	4	

<b>On a Single Station</b>	
Maximum number of trends	8
Maximum number of pens across all trends	64
<b>Across all Stations</b>	
Maximum number of trends	28
Maximum number of pens across all trends	224
<p>Note 1 – A Limit Trend object with default view settings corresponds to a Basic Trend for the purpose of these capacity constraints. If any additional view options are enabled a Limit Trend object corresponds to a full trend.</p> <p>Note 2 – A basic trend is a much simpler object that only includes the plot area and axes. It is recommended to use the basic trend when adding more than one trend object to a single display</p>	

## 2.7. History Sizing

### 2.7.1. Collection Rates

Items	Specifications	Comments
Standard history	<ul style="list-style-type: none"> <li>Predefined collection rates of 1, 2, 5, 10 and 30 minutes</li> <li>3 additional user defined collection rates can be defined.</li> </ul>	<ul style="list-style-type: none"> <li>When you configure a point parameter for standard history collection, Experion also collects 4 different standard history averages, based on the standard history snapshot rate that you choose for standard history collection.</li> <li>The default standard history snapshot rate is 1 minute and the collection rates for averages are 6-minute, 1-hour, 8-hour and 24-hour averages.</li> <li>The averages are calculated using the 1-minute base interval. That is, 6-minute averages are calculated on six 1-minute values. If you change the 1-minute base interval the averages are still calculated from the base interval. For example, if you change the base interval to 30 seconds, 6-minute averages are calculated on twelve 30-second values.</li> </ul>
Fast history	<ul style="list-style-type: none"> <li>Predefined collection rates of 5, 10, 15, 20 and 30 seconds.</li> <li>3 additional user defined collection rates can be defined.</li> </ul>	<ul style="list-style-type: none"> <li>A maximum of 8 collection rates can be defined choosing from the default intervals on the left</li> <li>Additional rates can be defined; however they must be in multiples of the base rates.</li> <li>The 5 second base rate can be configured to 1 second. The 5 second default collection rate for Fast History can be changed to 1 second, and the 1 minute collection for Standard History can be changed to 30 seconds if necessary. Note, however, that changing the collection rates in this way can place an additional load on the process control network.</li> </ul>
Average (based on Standard History rates)	<ul style="list-style-type: none"> <li>Predefined collection rates of 6, 60, 480 and 1440 minutes</li> </ul>	<ul style="list-style-type: none"> <li>A maximum of 4 collection rates can be defined</li> </ul>

Extended history	<ul style="list-style-type: none"> <li>1-hour snapshot</li> <li>8-hour snapshot</li> <li>24-hour snapshot</li> </ul>	<ul style="list-style-type: none"> <li>When a point is configured for extended history collection, all of these intervals are stored.</li> <li>A maximum of 3 collection rates can be defined choosing from the default intervals on the left.</li> </ul>
Exception history	<ul style="list-style-type: none"> <li>5, 10, 15, 30, and 60 seconds</li> <li>5, 10, 15, 30, and 60 minutes</li> <li>2, 4, 6, 8, 12, and 24 hours</li> </ul>	<ul style="list-style-type: none"> <li>Whereas standard, fast, and extended history collect and store point parameter values periodically, exception history collects values at the rate configured for that point parameter but only stores them if the value or quality of that point parameter has changed since it was last stored.</li> <li>Note that exception history only collects and stores string values.</li> <li>A maximum of 16 collection rates can be defined choosing from the default intervals on the left</li> </ul>
To support daylight savings and time zones, all collected data is historized in Universal Time Coordinated (UTC) time.		

### 2.7.2. Default History Files Sizes

Items		Specifications		Comments
		Time	Samples	
Standard history	1-minute snapshot	24 hours	1,442	
	6-minute average	7 days	1,682	The averages are calculated using the 1-minute base interval. That is, 6-minute averages are calculated on six 1-minute values.
	1-hour average	7 days	170	The averages are calculated using the 1-minute base interval.
	8-hour average	3 months	280	The averages are calculated using the 1-minute base interval.
	24-hour average	1 year	368	The averages are calculated using the 1-minute base interval.
Fast history	1- to 30-second snapshot	2 hours – 72 hours	8,652	
Extended history	1-hour snapshot	3 months	746	
	8-hour snapshot	1 year	281	
	24-hour snapshot	3 years	368	
<p>The number of samples in each history file can theoretically be increased to 100,000 samples. If the size of the history file is increased beyond the default qualified size, care should be taken not to exceed the maximum history file size constraints. (See section 2.8.4). History archiving is available to store the history files for later retrieval. Experion history data is seamlessly available for use across every Experion Station for trend displays, a, custom displays, applications, spreadsheets and ODBC compliant databases.</p>				

### 2.7.3. Maximum Parameters Assigned to History

Items	Default <sup>1</sup>	Maximum <sup>2</sup>	Comments
Standard history	2,000	50,000 at 60sec	Double, Float, Integer and Time data can be stored.
Fast history	1,000	1,000 at 1sec, 2,000 at 2sec	Same as above
Extended history	2,000	40,000	Same as above
Exception history	2,000	5,000 2,000 with 1 second polling 2,000 OPC DA limit parameters	String maximum of 255 characters can be stored. A maximum of 100 exception history parameters can be stored per second.

Note 1 – Default limit that Experion is shipped with it can be changed by a database initialization up to a maximum.

Note 2 – Maximum Limit can be achieved using High Capacity Computer Platforms. For SCADA only system, maximum limit could be 4-5 times higher than the specified limit.

### 2.7.4. Calculating History Space Requirements

Items	Specifications	Comments
Maximum history file size	2000 MB	<ul style="list-style-type: none"> <li>Each type of history sample is stored in a separate history file. For example, there are five history files for standard history, one each for: 1-minute snapshot, 6-minute average, and so on.</li> <li>An individual history file should not exceed this size.</li> </ul>
History formula	<p>If a customer wishes to collect P parameters for a particular history type and have a history file size in bytes of S then:</p> <p>Number of samples = <math>((S/2) / ((P*7) + 8)) - 1</math></p>	<p>Example:</p> <p>Standard history one minute (history1) file size is 432 611 536 bytes</p> <p>Number of parameters assigned to standard history is 50000</p> <p>Number of samples = <math>((432611536/2) / ((50000 * 7) + 8)) - 1</math></p> <p style="text-align: right;">= 617 history samples</p>

## 2.8. Server Data Acquisition Performance

Items	Standard Capacity System	High Capacity System	Comments
<b>Experion LX Controllers</b>			
Maximum parameters per second (pps) from all controllers (C300) on FTE	3,700	4,700	This includes data access to all CDA devices such as C200, C200Es, C300, PGMs, FIM, IOLIM, ACE, Simulation environment and LIOM.
Maximum number of CDA subscribed parameters from all controllers on FTE	8,000	25,000	This is the number of parameters that can be actively subscribed by a server at any one time. The Experion adds and removes items from the subscription list based on demand.
<b>DSA</b>			
Maximum pps from each configured DSA subscribing server	0	1,000	This information is duplicated in section <a href="#">2.16</a> , DSA.
<b>SCADA</b>			
Maximum pps from all configured SCADA devices	Limited by device		
<b>OPC</b>			
Maximum OPC pps from all configured OPC servers	See section <a href="#">2.18</a> , OPC		

## 2.9. Notification Performance

Items	Specification	Comments
Maximum number of events (burst condition)	1,500	The Experion LX Server alarm system will handle an event burst of up to 1,500 events, with a minimum time between consecutive bursts. An "event burst" is defined as a group of events greater than 40/sec, received from all connected event servers in a period of less than 3 seconds.
Formula to calculate the time period required between consecutive bursts, to allow for event processing	$\Delta T = BS / (60 - ER)$ Where: $\Delta T = \#$ of seconds required between bursts BS = Burst Size (number of events in the burst) ER = Event Rate between bursts	Examples: <ul style="list-style-type: none"> <li>1,500 event burst and no events between bursts: <math>\Delta T = 1,500 / 60 = 25</math> seconds</li> </ul> 500 event burst with 30 events/sec between: $\Delta T = 500 / 30 = 17$ seconds
Maximum number of sustained alarms/second <sup>1</sup>	30/sec	
Maximum number of sustained events/second <sup>1</sup>	10,000/Hour	With peaks of up to 40/sec
Maximum duration of events in online events file	12 weeks	
Maximum number of events in online events database	1.2 million	All alarms, login actions, operator actions, and configuration changes are logged in the online event file. Up to two events are generated for every alarm, including one event for entering the alarm condition and one for return to normal.  Event archiving can be used to access older events. Approximately 60 MB of hard disk space is required for every 100,000 events archived.
Maximum number of alerts/second	1	
Maximum burst of alerts	100	These totals are still subject to the overall maximum number of events per second and maximum burst of events limit that the Experion Servers can support.
Note 1 – The Experion LX Server includes the option to support OPC alarms and events in addition to native Experion LX notifications. When the Experion LX Server is configured to receive alarms and events from an OPC alarm and event server, the notification limits noted in this table are applicable to the combined set of events received from all connected event sources.		

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## 2.10. Supervisory Control and Data Acquisition (SCADA)

### 2.10.1. Terminal Servers

The SCADA controller or RTU connection to the Experion Server depends on several factors, including the plant's layout, the type of interface used and the controller's communication port(s). For those using a serial interface, controllers can be directly connected to the server's serial ports but would typically only be used on small systems. For larger systems, more serial ports can be added through the use of a Terminal or Device server.

Terminal Servers also provide a means of connecting serial port SCADA controllers to redundant Experion Servers. They can be deployed on network topologies using single Ethernet, and dual Ethernet, (two subnets. There can be single or dual connections to controllers, (when supported). A dual connection would require two Terminal Servers and be configured as a redundant SCADA channel in Experion.

Items	Qualified Devices
Terminal Servers	<ul style="list-style-type: none"><li>• Systech NDS/5000 Series Network Device servers: Built for industrial requirements, these RJ45 based terminal servers come in a range of 8 and 16 port models, all with a built in 3 port Ethernet switch as well as rack mount versions.</li><li>• Systech NDS/6000 Series Network Device servers: Built for industrial requirements, these DB9 based terminal servers come in a range of 2, 4 and 8 port models, some with a built in 4 port Ethernet switch and some rack mountable.</li></ul>

Note 1 – The above Terminal Servers are tested to reconnect ports under the different planned and unplanned fail over scenarios.

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### 3. Experion LX Hardware and Software Requirements

A computer platform must meet the following specifications to be used for Experion LX. These guidelines are intended to provide a minimum baseline. The actual hardware requirements will depend on the system configuration. Computers platforms should meet or exceed these specifications.

#### 3.1. Experion LX Server

Experion LX Server Performance Sizing			
System Type	Standard Capacity	High Capacity-I	High Capacity-II
<b>Capacity limits</b>	Systems with up to: <ul style="list-style-type: none"> <li>4000 SCADA points</li> <li>8000 Process Points</li> <li>10 Direct Stations</li> <li>Redundancy</li> </ul>	Systems with up to: <ul style="list-style-type: none"> <li>8000 SCADA points</li> <li>10000 Process Points</li> <li>5 DSA Connected Servers</li> <li>15 Direct Stations</li> <li>10 Flex Stations</li> <li>Redundancy</li> </ul>	Systems with up to: <ul style="list-style-type: none"> <li>50000 SCADA points</li> <li>10000 Process Points</li> <li>5 DSA Connected Servers</li> <li>15 Direct Stations</li> <li>10 Flex Stations</li> <li>Redundancy</li> </ul>
<b>Machine Type, OS</b>	Workstation Grade, Windows 10 OS	Server Grade, Windows Server 2016 OS	Server Grade, Windows Server 2016 OS
<b>Examples</b>	Dell OptiPlex 3040, Dell OptiPlex XE2, HP 400 G3	Dell T130	Dell T330, Dell R330, HP DL360p

##### 3.1.1. Server Hardware Requirements (Minimum Specs)

System Configuration	Standard Capacity	High Capacity-I	High Capacity-II
Processor	Intel i3-4330, 3.50 GHz, Dual Core	Intel E3-1220V5, 3.0 GHz, Quad Core	Intel E3-1270 V5 3.6 GHz, Quad Core
RAM	3 GB	3 GB	4 GB
Networking	100 Mbps Ethernet or FTE	100 Mbps Ethernet	100 Mbps Ethernet
Video Resolution	1024 x 768 65K colors	1024 x 768 65K colors	1024 x 768 65K colors
Video RAM	8 MB	8 MB	16 MB
Operating System	Windows 10 Enterprise 2016 LTSB	Windows Server 2016 64-bit	
Browser type	Microsoft Internet Explorer 11		
Hard Drive	500 GB <sup>2</sup>	500GB	500 GB
Example Hardware for LX Server	Dell OptiPlex 3040, Dell OptiPlex XE2, HP 400 G3	Dell T130	Dell T330, Dell R330, Dell R430, HP DL360p
Note 1 – The systems listed here are examples of platforms that will meet or exceed the recommended specifications.			
Note 2 – 160GB drive space for Virtual Machine			



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### 3.1.1. Network Hardware Accessories

Network Component	Comment
Fault Tolerant Ethernet <sup>1</sup>	Honeywell's patented Fault Tolerant Ethernet (FTE) network uses off-the-shelf networking hardware to allow Ethernet to provide "DCS network" functionality. FTE provides a robust and high availability network infrastructure for communicating to Experion LX Direct Stations, C300 controllers, etc.
Network Interface Cards	Workstations platform typically comes with single NIC port and following additional PCIe network cards are required for dual LAN or FTE use- <ul style="list-style-type: none"><li>• 2x Single Port Broadcom 5722 NetXtreme (for Dell OptiPlex workstations)</li><li>• 1x Dual Port Broadcom 5720 NIC (For Dell T5810 and HP 400G3)</li></ul> Server grade platforms (Dell T130, T330, R330 and HP DL360p G8) comes with dual port NIC card
Switches	<ul style="list-style-type: none"><li>• S2750-28TP-EI-C (Huawei 24 ports switch)</li><li>• 2530 R4 (HP 2530 24 Port Switch)</li><li>• DGS 3120-24TC <sup>2</sup> (DLink 24 Port Switch)</li></ul>
Note 1 – The FTE solution employs a single logical network over redundant media. By providing more communication paths between nodes, FTE also tolerates more faults, including all single faults and many multiple faults. In addition, FTE is transparent to higher-level applications, which benefit from the high network availability that FTE provides, without requiring any additional software configuration. Normal Ethernet nodes (non-FTE) can also connect to an FTE network and benefit from a more available communications environment than conventional Ethernet redundancy schemes offer.	
Note 2 – DLink 3120-24TC don't support FTE currently. This can be used for dual LAN only.	

## 3.2. Experion LX Station

A computer must meet the following specifications to be used as an Experion LX Station. These guidelines are intended to provide a minimum baseline. Honeywell computer platforms meet these specifications but may not necessarily be the example platforms listed below. It's highly recommended that user select Honeywell qualified computers to avoid potential incompatibility. For installation information on computer platforms, including physical, electrical, corrosion, and other environmental requirements, please consult the Honeywell installation guides.

This platform specification is based on typical use of the system. To achieve satisfactory performance additional RAM or a higher performance CPU may be required in the following circumstances:

- If the recommended number of data bound objects per display or per station is exceeded
- Third party applications are used
- When purchasing a new platform or adding memory to an existing platform the strong recommendation is to use the higher memory configuration. This will provide optimal performance and could avoid the need to add more memory in the future.

For Standard capacity system, the maximum number of supported Direct Stations for each system is 10, and up to 5 Flex stations. For High capacity system, the limit is 15 Direct Stations and up to 10 Flex Stations.

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### 3.2.1. Station Hardware Requirements (Minimum Specs)

System Configuration <sup>1</sup>	Specifications
Processor	Single Intel Processor i3-4330, 3.50GHz, Dual Core (or equivalent)
RAM <sup>1</sup>	8GB (4GB for Virtual Machine)
Networking <sup>2</sup>	100 Mbps Ethernet
Operating System	Microsoft Windows 10 Enterprise 2016 LTSC (64bit)
Video resolution	1280x1024, 1600x1200, 1680x1050, 1920x1200, 1920x1080; 65K colors
Video Memory	8MB VRAM
Browser type	Microsoft Internet Explorer 11
Hard drive	500GB (100GB for Virtual Machine)
Example Hardware	Dell OptiPlex XE2, OptiPlex 3040, HP 400G3 or equivalent
Note 1 – An additional 1GB of RAM is suggested for enhanced performance if the Control Builder client is used	
Note 2 – For controllers, Direct Stations can only communicate directly with devices that reside in the same FTE Community	

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## 4. Model Numbers

### 4.1. Experion Server Database Software

Model Number	Description
LX-DBASE1 <sup>1</sup>	Experion LX Base Software
LX-DME500 <sup>2</sup>	Experion LX Media Kit – Standard
<p>Note 1 – Experion LX bases software includes 100 Process Points, 100 SCADA points, 2 Flex Station license, 1 Direct Station license, 1 Control Builder Client License, 1 Display Builder license, 1 Quick Builder license, Display Versioning Control, Control Builder Template Support, CDA Subsystems Interface, C300 Control Solver -50ms, 127 PCDI, Enterprise Model Builder, History Collection/Archiving, Events Collection/Archiving, Chart Monitoring, Reporting, Alarm Event Report, Alarm Duration Report, Alarm Metrics, Alarm Group, Excel Report, Multiple Display Support, DSA Publish enabling License, Recipe Management, ODBC Driver, Network Server, User Scan task, Batch Report, Honeywell Universal Modbus Interface and Backfill, Allen-Bradley integration, Allen Bradley Serial Interface, Allen Bradley RSLinx Interface, Modbus interface, Honeywell S9000 interface, Honeywell 620 LCS interface, Honeywell RM7800 Flame Safeguard, Honeywell DPR Recorders interface, DNP3 interface, Honeywell Safety Manager and FSC interface, GE Fanuc Series 90 PLC via Ethernet, Redirection Manager, OPC Client Interface, OPC Display Data Client, 1 Excel Data Exchange Users.</p> <p>Note 2 – The media kit doesn't include hardware security key (dongle). The Hardware security key is required only for select countries and this can be purchased separately using following models. EP-DONUSB (Hardware Security key) and EP-DONENB (Software Protection Enabler).</p>	

### 4.2. Database Size Expansions

Model Number	Description
<b>Process Points</b>	
LX-DPR100	Experion LX 100 Process Points Adder to Database Size
LX-DPR01K	Experion LX 1,000 Process Points Adder to Database Size
LX-DPR02K	Experion LX 2,000 Process Points Adder to Database Size
LX-DPR05K	Experion LX 5,000 Process Points Adder to Database Size
LX-DPR10K	Experion LX 10,000 Process Points Adder to Database Size

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Model Number	Description
<b>SCADA Points</b>	
LX-DSC100	Experion LX 100 SCADA Points Adder to Database Size
LX-DSC01K	Experion LX 1,000 SCADA Points Adder to Database Size
LX-DSC02K	Experion LX 2,000 SCADA Points Adder to Database Size
LX-DSC05K	Experion LX 5,000 SCADA Points Adder to Database Size
LX-DSC08K	Experion LX 8,000 SCADA Points Adder to Database Size
LX-DSC10K	Experion LX 10,000 SCADA Points Adder to Database Size
LX-DSC25K	Experion LX 25,000 SCADA Points Adder to Database Size
LX-DSC50K	Experion LX 50,000 SCADA Points Adder to Database Size
Note 1 – The base software includes 100 Process and 100 SCADA points.	

### 4.3. Server Redundancy

Model Number	Description
LX-RBASE1 <sup>1</sup>	Experion LX Redundancy Base Software
<b>Process Points</b>	
LX-RPR100	Experion LX 100 Process Points Redundancy Adder
LX-RPR01K	Experion LX 1,000 Process Points Redundancy Adder
LX-RPR02K	Experion LX 2,000 Process Points Redundancy Adder
LX-RPR05K	Experion LX 5,000 Process Points Redundancy Adder
LX-RPR10K	Experion LX 10,000 Process Points Redundancy Adder
<b>SCADA Points</b>	
LX-RSC100	Experion LX 100 SCADA Points Redundancy Adder
LX-RSC01K	Experion LX 1,000 SCADA Points Redundancy Adder
LX-RSC02K	Experion LX 2,000 SCADA Points Redundancy Adder
LX-RSC05K	Experion LX 5,000 SCADA Points Redundancy Adder
LX-RSC08K	Experion LX 8,000 SCADA Points Redundancy Adder
LX-RSC10K	Experion LX 10,000 SCADA Points Redundancy Adder

LX-RSC25K	Experion LX 25,000 SCADA Points Redundancy Adder
LX-RSC50K	Experion LX 50,000 SCADA Points Redundancy Adder
<p>Note 1 – Redundancy software follows the same methodology as selecting the database size from the previous step. Start by selecting the redundancy base software, LX-RBASE1. This option includes server redundancy for 100 Process and 100 SCADA points. This option does not include an additional Experion Station connection license. Next, choose the equivalent point adders for redundancy that were chosen for the database. The point count has to exactly match that of the database point count.</p>	

#### 4.4. Station Expansions and Multi-window

Model Number	Description
LX-STAD01 <sup>1,2</sup>	Experion LX Direct Station
LX-HSTA01 <sup>1,3</sup>	Experion LX Flex Station
LX-SMWIN1 <sup>4</sup>	Multi-window Support, per computer platform
<p>Note 1 – Experion LX Base software includes 1x Direct Station and 2x Flex Station instances</p> <p>Note 2 – Up to 14 additional Direct Stations can be ordered for a maximum of 15 Direct Stations per Server.</p> <p>Note 3 – Up to 8 additional Flex Stations can be ordered for a maximum of 10 Flex Stations per Server.</p> <p>Note 4 – LX-SMWIN1 is a purchased option for the Experion LX Flex Station and is standard for the Experion LX Direct Station. The Multi-Window option can be implemented as Multiple Static Stations (up to 4 static station instance) or as Multiple Windows (up to 4 native windows or 16 using Experion Safeview) per computer while consuming only a single station license.</p>	

#### 4.5. Distributed System Architecture

Model Number	Description
LX-XRESR1 <sup>1</sup>	DSA Remote Server Enabler (DSA Subscribe)
<p>Note 1 – Each Experion LX Server is enabled to publish data in a DSA design. LX-XRESR1 is required once for a server or redundant server pair that needs to subscribe to data. One DSA remote server license is required to subscribe to up to the maximum number of 5 servers.</p>	

#### 4.6. Engineering Tools

Model Number <sup>1</sup>	Description
LX-COBLDR <sup>2</sup>	Experion LX Control Builder
LX-QKBLDR <sup>2</sup>	Experion LX Quick Builder
LX-DSBLDR <sup>3</sup>	Experion LX Display Builder

- Note 1 – One of each of Control Builder, Quick Builder and Display Builder are included with the Base Server Software. Additional licenses can be ordered when a base software license is present. These tools can be used off-line.
- Note 2 – Concurrent use of Control Builder and Quick Builder is supported starting Experion LX R500, with a maximum limit of 4 instances.
- Note 3 – Includes HMIWeb Display Builder and Display Builder

## 4.7. Microsoft Windows 10 Operating System

Model Number	Description
MS-OSLW10 <sup>1,2</sup>	Windows 10 Enterprise 2016 LTSB
Note 1 – Experion LX R500 uses Long Term Service Branch (LTSB) based Windows 10 operating system.	
Note 2 – This is an optional model in case a Honeywell supplied Win10 OS is required.	

## 4.8. Microsoft SQL CAL

Model Number	Description
MZ-SQLCL4	Microsoft SQL Runtime CAL
EP-S08CAL	Windows Server 5 Device CAL
EP-T09CAL	Windows Terminal Services (RDS) CAL

## 4.9. Experion Virtualization CAL

Virtualization is the creation of a virtual version of an Operating System / Server / Storage Device / Network Resource. There are many different types of virtualization. With Experion LX, Honeywell uses a type called Platform Virtualization. Platform virtualization refers to the abstraction or separation of computer hardware resources from one or more operating systems. Refer Virtualization Planning and Implementation Guide for Experion LX. To read more about our use of virtualization technology, refer to Experion Virtualization Spec document: EP03-700-100

Following Virtualization CALs are needed for Experion LX Server and Station nodes when running in a Virtualized environment.

Model Number	Description
LX-EPCVMS <sup>1,3</sup>	Experion LX Virtualization Server CAL
LX-EPCVMC <sup>2,3</sup>	Experion LX Virtualization Client CAL
Note 1 – Enables Virtual deployment of Experion Server	
Note 2 – Enables Virtual deployment of Experion Flex Station, Experion Direct Station	
Note 3 – Doesn't include VMware software	



## 4.10. SCADA Interfaces, OPC and Data Exchange Options

Below list covers various licensed interface and data exchange options. This is in addition to the interfaces and options that are included in Experion LX base software LX-DBASE1, please refer section [4.1](#) for more details.

Model Number	Description
<b>Industry Standard Interfaces</b>	
LX-IDNPHB <sup>1</sup>	DNP3 History backfill functionality
LX-I60870	IEC 60870 Protocol SCADA Interface
LX-I61850	IEC 61850 Protocol SCADA Interface
<b>Honeywell Device Interfaces</b>	
LX-IHWMLS	Honeywell Master Logic Integration
LX-IADDVM	DVM Integration (Via Point Server)
<b>Third Party Devices</b>	
LX-IEMB00	Enron Modbus Interface
LX-IEMBOE	Enron Modbus EFM Functionality
<b>OPC and Data Exchange <sup>4</sup></b>	
LX-OPCINT	OPC Integrator SAI <sup>3</sup>
LX-OPCDA1	OPC Data Access Server
LX-OPCHDA	Experion LX OPC Historical Data Access CAI <sup>2</sup>
LX-OPCSAE	OPC Alarm & Event Server CAI <sup>2</sup>
LX-OPCADV	OPC Advanced Client
LX-XLDE01	Microsoft Excel Data Exchange, per user
Note 1 – DNP3 interface is included in the LX database license Note 2 – CAI stands for Client Application Instance Note 3 – SAI stands for server Application Instance Note 4– Refer section <a href="#">4.1</a> for various OPC options included with LX database license	

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