

# NL220 Tutorial

# **Objectives** :

- User guide for NL220
- Present an efficient workflow to create your NL220 project



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# 1. Create a new project

#### **New Project**

When you launch NL220, the following screen appears :

Log in NL220			
User <u>n</u> ame	Antoine Hervois		Log in
<u>U</u> ser initials	A.H.		<u>H</u> elp
General parame	ters		
<u>R</u> emote 1	CP/IP mode	About Remote IP Mod	de

Figure 1 : NL220 Log in window

Enter your name and Log in.

The "Last Opened" project screen appears :

Existing projects list	
Projects Last opened  Project  DEMD  BUCS_NL220_2  Valise2  Test_LTM	Select <u>N</u> ew Cancel <u>H</u> elp
Description	

Figure 2 : NL220 Last opened project window

Click on "New" to begin creation of a new project.

New project	
<u>N</u> ame Aut <u>h</u> or <u>U</u> ser initials <u>D</u> escription	MyProject OK Antoine Hervois Cancel A.H. <u>H</u> elp
<u>M</u> ode	Administration     Maintenance
⊙ <u>C</u> reate a	new database ( <u>O</u> pen an existing database 🛛 Restore a <u>b</u> ackup
Project's p <u>a</u> t	n C:\NLPrj\MyProject
Network <u>i</u> nte	rface IP_LON
Reco <u>v</u> ery	database from network [up to 64 devices]

Figure 3 : New project window

Give a name to your project, and set a Network interface using the combo box. Click on "OK".

The "Project Settings" screen shall appear :

Project settings						
😭 General 🚽	Network 📴 Custo	mize 85 Tre	es 🎦 Trees display 🚺			
Domain id length   1  3  6 Domain id 00						
Authentication enal	oled 🗌					
System authen key	tication FF FF	FF FF [	FF			
<u>U</u> pdate interval	120 seco	nds (0 none)				
Media type	Private media	O Shared me	edia			
Discovery interval 0 seconds (0 none)						
Repeat timer 3 - 0.048 s						
Retry count	3					
Trans <u>m</u> it timer	5 - 0.096 s	~				
Check interval for n	tobile <u>d</u> evices	60	(0 disabled)			
Check interval for te	emporary devices	120	(0 disabled)			
Check interval for <u>s</u>	tationary devices	900	(0 disabled)			
Check interval for p	ermanent devices	0	(0 disabled)			
		ок Г	Annuler Appliquer			

Figure 4 : Project settings window

Let the default values in a first time, you can come back to it later (in "Project" menu, option "Project Settings").

Now you have created your empty project, and can move on to the second part : Creating the network infrastructure.

#### New Project from an existing directory

It is also possible to create a new project in NL220 from an existing LNS database created with another LNS manager tool.

New project	X
<u>N</u> ame Aut <u>h</u> or <u>U</u> ser initials <u>D</u> escription	MyProject OK Antoine Hervois Cancel A.H. <u>H</u> elp
<u>M</u> ode	Administration     Maintenance
<u>○ C</u> reate a	new database 💿 <u>Open an existing database</u> 🛛 Restore a <u>b</u> ackup
Project's p <u>a</u> ti	h C:\NLPrj\MyProject
Network inte	rface IP_LON
Server fo	r remote stations
Reco <u>v</u> ery	y database from network ✓ S <u>m</u> all network (up to 64 devices)

Figure 5 : New project from an existing directory

Set in "Project's path" the path of your existing LNS database. Click on "OK" and validate default project settings. You will then be able to see your whole LNS database in NL220 trees.

#### New Project from a backup file

In the "New Project" window, select "Restore a backup" option, and set the directory of the backup file.

New project						
<u>N</u> ame Aut <u>h</u> or <u>U</u> ser initials <u>D</u> escription	MyProje Antoine A.H.	ect Hervois	OK Cancel <u>H</u> elp			
<u>M</u> ode <u>C</u> reate a	Mode  Administration  Maintenance Create a new database  Deen an existing database					
Project's path     C:\NLPrj\MyProject       Backup file						
Network inte	rface	IP_LON				
Server fo	r remote / databa	stations se from network Small network	(up to 64 devices)			

Figure 6 : New project from a backup file

If your backup file is valid, the database will be restored. Click on "OK", validate the default settings of your project, and your new project is now created.

### 2. Create network infrastructure

#### Switches and routers

If you have created an empty projet, NLSmartChannel should launch just after project creation. If you have created a project from an existing LNS database or from a backup file,

you can launch it from th	nis ico	n 📩
NL220 LonWorks(c) N Project Edit Selection Clip	lanage besid	er - N Tree
<b>*</b> * * * *	÷	- 12
A		44

Figure 7 : NLSmartChannel icon

With an empty project, your network architecture is empty as follows :



Figure 8 : NLSmartChannel main window

To edit the channel media or name, left click on it and choose "Edit".

If you want to create an infrastructure device, left click on the channel and choose "New infrastructure device". Choose the product within the list. It will automatically create the corresponding channels. For instance if you create an IP router with two FTT10 ports, the router will be created and the two FTT10 ports are created with the router.



Figure 9 : NLSmartChannel new IP router

#### Configure infrastructure products

To configure an infrastructure product, left click on it and select "Change type". You can change the product's mode (or class) between "Switch" and "Router". If you choose "Router" or "Configured", you must commission the device (see next paragraph).

Ξ	Near side port			
	Port	Port #1		
⊡	Mode			
	Mode	Router mode 📃 🗾		
Ξ	Class	Switch mode		
	Port #1	Router mode		
	Port #2	Configured		
	Port #3	Configured		
	Port #4	Configured		
	Port #5	Configured		
	Desumentation			

Figure 10 : NLSmartChannel configure router type

#### Commission infrastructure products

To commission your router, left click on it, go to "Network" menu and select "Commission".



Figure 11 : NLSmartChannel router commissioning

To complete installation of your router, enter the Neuron Ids of the corresponding ports (or press the service pin button to send the Neuron ID).

Note : Switches are NEVER commissioned.

Commission InfraStructure Device				
<u>N</u> ame	LIPB			
<u>T</u> ype	LIP-33EC	FB (router mode)		
	Port	Neuron ID		
	Port_IP	00000000000		
	Port #1	00000000000		
	Port #2	00000000000		
	Enter the NeuronID of Keep the service pin p release it.	the router port to commission or ressed until the LED of the port lights up then		
[	Set NeuronID witho	ut commissioning		
[	Filter service pin on	programID		
[	Commission Deco	mmission Close Help		

Figure 12 : NLSmartChannel router Neuron IDs

Use the "Test all" button to check that your router is correctly installed.

# 3. Create organization (subsystems)

#### Logical organization

If you started a project from nothing, this is how your subsystems tree should look like now :



Figure 13 : Subsystems tree

You can now create a hierarchical organization with your subsystems ; for instance, a geographical organization like this :



Figure 14 : Subsystem organization 01

Or if you prefer, manufacturer organization :



Figure 15 : Subsystem organization 02

To create a subsystem, right click on an existing subsystems and choose "New subsystem in <subsystem's name>..."

You can also have several organizations in a same project, as we will see in the next paragraph.

#### Create several organizations

You can create several organizations within the same project. For instance if you have already a geographical organization, you can create a manufacturer, or product, ... organization. For this, you have to create a new root subsystem by right clicking on Project in the tree and choosing "New root subsystem".



Figure 16 : Several subsystems organization

To create clones of your devices from one organization to another, maintain CTRL+SHIFT pressed and drag and drop your device from the source subsystem to the destination subsystem.



Figure 17 : Clone node in different root subsystem

Every action sent to the first node (changing a configuration, deleting the node, etc ...) is automatically done on its clone also.

# 4. Create templates

#### With a plugin

First check that your plugin is registered ; go to the "PlugIns" menu, and select "Register plugins". If your plugin is registered, a green mark should be displayed next to it. If you need to register a plugin, double click on it (or on several plugins if you need to register several) and click on "Register".

Once your plugin is registered, verify that the registration has automatically created your device templates. Go to the "Template" tree, and verify the corresponding template is in the list.



🗉 🛅 NLSensor

Figure 18 : Device template tree

#### With a XIF file

Go to the "Template" tree (see previous paragraph), ; right click on Project, and choose "New device template". Then choose an XIF file to load, and click on "OK".

New device templa	ite	
Name NL	_ightFanCoil	OK Cancel
<ul> <li>From interface file</li> </ul>		Help
Description file	C:\LonWorks\import\NLLightFanCoil.XIF	
O From network	(Must be ONNET to enable this option)	
Neuron ID		

Figure 19 : New device template window

# 5. Create nodes

#### Create a node from the template

In the "Template" tree, right click on the device template and choose "New node from <template's name>".

New node(s)		
<u>N</u> ame		ОК
		Cancel
<u>C</u> hannel	Auto Backbone	<u>H</u> elp
<u>S</u> ubnet	▲uto Subnet_1_1	
S <u>u</u> bsystem(s)	Locations	<u>A</u> dd <u>R</u> emove
Oreate node from the second	om a device template	-
<u>D</u> evice tem	plate NLSensor	
<u>N</u> umber to a	create 1 Indent in name begins	1
	Eixed number of digits in name	1
Create node from the contract of the contra	om network	
✓ Set all configur	rations to manufacturer's default	

Figure 20 : New node from a device template

Define a name for the node, browse the channels to create it on the good channel. If you want to create the node in a subsystem that is not listed, click on "Add" to add the subsystem to the list.

#### Create several nodes in one operation

You can create a complete set of nodes in no more effort than creating just one. When you select "New node from <template's name>", you can see the option "Number to create" under "Create node from a device template". Set here the number of nodes you want to create, and define the classification of the nodes and the number of displayed digits for the index.

New node(s)			X
<u>N</u> ame	Node		ОК
The names will		Node 03 through Node 07	Cancel
<u>C</u> hannel	Auto	LIPB_Port3	<u>H</u> elp
<u>S</u> ubnet	🗹 <u>A</u> uto	Subnet_1_1	
S <u>u</u> bsystem(s)	Location	8	Add Remove
Oreate node from the index of the index o	om a devic	e template	
<u>D</u> evice temp	plate	NLSensor	
<u>N</u> umber to a	reate	5 Indent in name begins	3
		Eixed number of digits in name	2
Create node from the contract of the contra	om networl	<	
✓ Set all configur	ations to n	nanufacturer's default	

Figure 21 : Create several nodes in one operation

Here this will create the nodes Node 03, Node 04, ..., Node 07 on the channel LIPB\_Port3, in the Locations subsystem.

÷	Locations
	🚊 📲 Manufacturer 1
	🚍 💶 Product 1
	😟 🖅 Node01 (NLSensors Newron System)
	Product 2
	🚽 🖶 Manufacturer 2
	🖻 🖅 Node 03 (NLSensors Newron System)
	🖮 🖅 Node 04 (NLSensors Newron System)
	🖻 🖅 Node 05 (NLSensors Newron System)
	🖻 🚭 Node 06 (NLSensors Newron System)
	🗄 🖅 Node 07 (NLSensors Newron System)
•	

Figure 22 : Subsystem tree after several nodes created

#### Create a node from the network

To create a node from the network, the project must be assigned a network interface (at project's creation or opening). Then NL220 must be set "ONNET"

# 6. Apply configurations

#### From the plugin

First thing to check is that your device plugin is registered (see chapter 4 paragraph 1). Then right click on the node, go to PlugIns menu, and launch the corresponding plugin. You can then configure your device through plugin interface.

#### Using direct node edition

To reach the devices configuration properties, right click on the node and choose "Edit". The node menu will appear on the right. Go to the "Configurations" tab to browse the different configuration properties.

If you select a configuration property, its database value will appear in the "Value" field. You can "Upload" the value (get the value from the device on the field) and "Download" (send the database value to the device).

Node	NODE01		Close
Name	Digital in 1		Help
	Consult you	device's documentation about configurations	
Name		Туре	Upload
SCPTr	minSendTime	SCPTminSendTime	-
SCPT	direction	SCPT direction	Download
			Copy all
Name Description	SCPTdirection	  	il id
Name Description	SCPTdirection	isable Device specific	ad D
<u>N</u> ame Description Pag Bement	SCPTdirection SCPTdirection Mfg Reset Const Offline 1 f f f f f f f f f f f f f f f f f f f	isable Device specific	ad

Figure 23 : Edit device or functional block configuration properties

In most cases the configuration properties are available at Functional block level and not at device level. In such case, expand the node in the tree and edit the functional block to access its configuration properties.

<ul> <li>● ● Node 03 (NLSensors Newron System)</li> <li>● ● ● Interface</li> <li>● ● ● ● NLSensor</li> <li>● ● ● ■ ● RemoteControl 1_</li> </ul>	Ready.
🖅 🖙 Remote Control 🕻 🔟 Edit	
田子 Occupancy     田子 Temp1 Sensor     田子     田      田     田     田     田     田     田     田     田     田     田     田     田     田     田	

Figure 24 : Edit a functional block

#### Copy / paste configuration values

Once you have configured one node, you can copy its configuration properties values and paste same on other nodes using the same template. To copy only one selected configuration property, edit the node / the functional block, go to the "Configuration" tab, select the configuration property and click on "Copy to memory". To copy all values of a node, right click on the node, and select "Copy configuration values in memory".

To paste this value, right click on a node, and choose "Paste configurations values from memory". You can also paste the values recursively to a subsystem; right click on the subsystem, go to "Nodes", check that "Recursive commands on subsystem" is enabled (if not click on it), and then click on "Paste configuration values from memory to nodes".

in the Manufacture	ations	Opening	g project <myproject> and initializing project</myproject>
📄 🗗 Proc 🗵	<u>E</u> dit		system
	<u>R</u> ename		ig interface to network types files
	Remove		project's screen
🖃 😨 Node 03	Print	•	s now opened.
i⊒ner i∎ m∰	Searc <u>h</u>	•	d actually contains :
	Nodes	•	Recursive commands on subsystem

Figure 25 : Recursive commands active

# 7. Create bindings

#### Right click on the variable

Expand the node and its functional block to display the available network variables. Then right click on the variable you want to bind, and click on "Variable's connection". It will open the connection window in the right, as follows :

	New variable connection		
Name NvConn1			Create
Outputs	Inputs		Cancel
Device[.Profile]	Device[.Profile]	∠ Network Variable	
Node U3.RemoteControl 1 nvoLg1a	_		
			Help
			<u> </u>
Remove nv Remove all	Remove nv Remove a	all	
Service <default>  Receive timer <default></default></default>	✓		
Retries count <default> Repeat timer <default></default></default>	<b>*</b>		
Authenticated Priority Transmit timer <default></default>	✓		
Broadcasting 💿 Never 🔿 Group 🔿 Always			
Use alias for <ul> <li>Selector conflicts</li> <li>Unicast</li> <li>All to defau</li> </ul>	ts		

Figure 26 : New connection

You can then drag and drop variables to the inputs or outputs fields to add variables to the connection. Define the binding settings, or let the default values. Click on "Create" to validate the connection's creation. After the variable is bound, it will appear light blue instead of white in the tree.



Figure 27 : After connection is created

# Drag and Drop

Another way to create a connection is to drag on variable on the tree onto another, and then it will automatically display the connection window with the Inputs and Outputs fields fed with the corresponding variables.

### Automatic Host binding

It is possible to create an automatic connection to the host in the device template. In this case all the nodes created from this template will automatically be bound to the host.

Go to the "Template" tree ; edit your device template, and go to the "NVs" tab. Select the variable to be bound ; display the "Connection" menu, and check "Automatically connected to the host". You can then define the settings of the connection.

UI	Index	Name		Functional Profile	Browser	~	
Þ	1	nvoStatus		NLLightFanCoil			~
þ	3	nvoFdLg1		Light1			Close
Þ	6	nvoFdLg2		Light2		ſ	Help
Þ	9	nvoFdLg3		Light3		- 7	
Þ	12	nvoFdLg4		Light4		- (	Automatic UNVT d
Þ	15	nvoFdLg5		Light5		(	Rename devices
þ	18	nvoFdLg6		Light6			Tionanio devideo
þ	21	nvoFdVt1		FanCoil1			○ All rave
Þ	23	nvoWin1		FanCoil1			Olenut only
Þ	25	nvoFdVt2		FanCoil2			O input only
Þ	27	nvoWin2		FanCoil2			Ouput only
Þ	29	nvoFdVt3		FanCoil3		~	Config only
Automa	atically conn face Mair	ected to the host interface	Always c Network variable name	reate the local nv iStatus			
Automa Local inter Service	atically conn face Mair (De	ected to the host ninterface 💙 fault> 💙	Always c Network variable name Rcv timer	reate the local nv iStatus Jefault>			
Automa .ocal inter Service Retries	atically conn face Mair <de <de< td=""><td>ected to the host n interface fault&gt; ault&gt;</td><td>Always c Network variable name M Rov timer &lt;[ Repeat timer &lt;[</td><td>reate the local nv rStatus Default&gt; Vefault&gt;</td><td></td><td></td><td></td></de<></de 	ected to the host n interface fault> ault>	Always c Network variable name M Rov timer <[ Repeat timer <[	reate the local nv rStatus Default> Vefault>			

Figure 28 : Automatic host binding from template

# 8. Copy / paste

#### Subsystems with nodes and bindings

It is possible to copy and paste a subsystem from the subsystem view ; by copying the subsystem, you can copy also the nodes and the bindings inside of this subsystem.

To copy the subsystem, right click on it and choose "Copy to memory". To paste it, right click on the destination subsystem, and choose "Paste". In paste options, you can see the different settings you can choose to copy (nodes, bindings, ...).

Paste options	
<ul> <li>Child subsystems are copied</li> <li>Internal connections are copied</li> <li>Copy node configurations</li> <li>Set undefined configurations to default</li> </ul>	OK Advanced Cancel
Do not show this window again	Help

Figure 29 : Paste subsystem options

As a result, the subsystem is copied with all nodes, internal bindings and configuration properties copied.



# 9. Install a node

To install the node, you must open your project with a valid network interface, and be sure the project is ONNET (see chapter 5 paragraph 3).

Then select the node and hit CTRL+I (or right click, "Install") ; the following window will appear :

Installing	Replacing a node	
Device N	ode Light	Continue
Subsystem	s GeographyBuilding 01Floor 01 LocationsManufacturer 1Product 1	Cancel
Neuron <u>I</u> D	00 00 00 00 Press service pin or enter Neuron ID	<u>H</u> elp
	☑ Filter service pin on program ID	
Simple <u>S</u> imple	NeuronId setting (no installation)	M <u>o</u> re details

Figure 31 : Install a node

You can manually enter the Neuron ID, or press the service pin of the device to fill the Neuron ID field.

An uninstalled device will appear in grey in the tree ; an installed device will appear in green (or in red).

#### 10. Browser

You can in NL220 browse the value of your variables. To add a variable to the browser, right click on it and click on "Add to browser".

								Variables browser		
	•	Dir P	Variable NV03 NV12	A	Device[.Profile] LightFanCoil.Light 1	Type SNVT_setting	Interval	Value SET_OFF 0,0 0,00		Close Remove all
		þ	nvoLg1a		Sensor.RemoteControl 1	SNVT_setting	1000	SET_OFF 0,0 0,00	_	
(	9	àve	• View	<u>M</u> erge vie	ew Load View				<u>S</u> top if closed	Network <u>s</u> ilent

**Figure 32 : Variables browser** 

By right clicking on a variable in the browser, you can access its details, and poll or write a value to the variable.

NL220 has also an automatic browser function ; you must first define in the device template which variables you want to browse.

Dir	Index	Name	Functional Profile	Browser		
¢	1	NV01	NLLight Ventilo			Chur
\$	3	NV03	Light 1			Liose
\$	6	NV06	Light 2			Help
Ð	9	NV09	Light 3			
Þ	12	NV012	Light 4			Automatic UNVT de
Ð	15	NV015	Light 5			Bename devices
Þ	18	NV018	Light 6			
1 2	21	NV021	Light 6			All pup
₽	23	NV023	Ventil 1			Obsidash
				-		U input only
Ş	25	NV025	Ventil 2			
0 0	25 27	NV025 NV027	Ventil 2 Ventil3			Ouput only
වූ වූ දුප දුප	25 27 29 <u>Properties</u>	NV025           NV027           NV029           Advanced         Connection	Ventil 2 Ventil3 Ventil4			Ouput only Oconfig only
D D D D eneral	25 27 29 <u>Properties</u> <u>NV02</u>	NV025           NV027           NV029           Advanced         Connection	Ventil 2 Ventil3 Ventil4		Туре	Ouput only     Oconfig only
3 3 3 2 eneral 3 me scription	25 27 29 <u>Properties</u> <u>NV02</u>	NV025           NV027           NV029           Advanced         Connection	Ventil 2 Ventil3 Ventil4		Туре	Quput only <u>C</u> onfig only
ime scription	25 27 29 <u>Properties</u> NV02	NV025 NV027 NV029 Advanced Connection	Ventil 2 Ventil3 Ventil4		Туре	Quput only     Config only     SNVT_setting
iscription	25 27 29 Properties NV02	NV025           NV027           NV029           Advanced           Connection           I           entil 1	Ventil 2 Ventil3 Ventil4		Туре	Quput only     Config only
Seneral same	25 27 29 Properties NV02	NV025 NV027 NV023 Advanced <u>Connection</u>	Ventil 2 Ventil3 Ventil4		Туре	Quput only     Config only
Ceneral Cenera	25 27 29 Properties NV02 Prop v 4	NV025 NV027 NV029 Advanced <u>Connection</u>	Ventil 2 Ventil3 Ventil4		Туре	Ouput only Config only SNVT_setting

Figure 33 : Device template browser definition

Then enable the automatic browser by clicking this icon 2. If you then select a node using this template in the subsystems tree, all the variables defined in the device template will automatically be added to the browser.

	L						
Project		Dir	Variable 🛛 🛆	Device[.Profile]	Туре	Interval	Value
Local interface		Ъ	NVO3	LightFanCoil.Light 1	SNVT_setting	1000	SET_OFF 0,0 0,00
Locations     LightFanCoil (NL Light Ventil Newron System)		Ъ	NVO6	LightFanCoil.Light 2	SNVT_setting	1000	SET_OFF 0,0 0,00
		Ъ	NV09	LightFanCoil.Light 3	SNVT_setting	1000	SET_OFF 0,0 0,00
Sensor (NLSensors Newron System)		Ъ	NV012	LightFanCoil.Light 4	SNVT_setting	1000	SET_OFF 0,0 0,00
		Ъ	NV015	LightFanCoil.Light 5	SNVT_setting	1000	SET_OFF 0,0 0,00
		Þ	NV018	LightFanCoil.Light 6	SNVT_setting	1000	SET_OFF 0,0 0,00
		Ъ	NV021	LightFanCoil.Light 6	SNVT_setting	1000	SET_OFF 0,0 0,00

Figure 34 : Automatic browser

# 11. Maintenance functions

You can chose to open your project in maintenance mode, or maybe your license restricts you to using NL220 in maintenance mode.

<u>N</u> ame	Valise2	ОК
Aut <u>h</u> or		Lancel
<u>U</u> ser initials	A.H.	<u>H</u> elp
<u>D</u> escription	O Administration ( ) Maintenance	
Project's p <u>a</u> l	th C:\NLPrj\Valise2\	
Network inte	erface NIC_USB_1_000	
Server fo	or remote stations	

Figure 35 : Maintenance mode

In this case, as you can see in the following pictures, the functionalities are restricted : you cannot add, delete, install or uninstall a node.

🖃 📮Location	\$					
	I	<u>E</u> dit				
		Print				
	23	All configurations to default				
	23	All undefined configurations to default				
		Network	Þ		Test	Ctrl+T
		Mode	•	▦	Network t <u>a</u> bles	Ctrl+A
	3	Do <u>w</u> nload program Ct	trl+D	$\mathbb{T}_1^0$	<u>R</u> eset	Ctrl+E
		Mar <u>k</u> as	•	er og se	<u>R</u> epair	Ctrl+R
		Copy configuration values in memory		ిం	Repl <u>a</u> ce	Ctrl+I
		Copy extensions in memory		P	<u>W</u> ink	Ctrl+W
	L	ligura 36 · Maintananga mada functional	lition			

Figure 36 : Maintenance mode functionalities

Still, you can apply all these maintenance functionalities as recursive commands on a subsystem, to win time instead of testing the nodes one by one.



Figure 37 : Recursive commands in maintenance mode

### 12. Order credits

To order credits, launch NLCreditsGenerator from the icon . Enter then the number of credits to add, and then click on "Send email" or "Copy to clipboard" to copy the key and paste it in an email or a text file. Send us the key, we will send you back a deprotection key to validate the new credits.

### 13. Conclusion

This was a tutorial for NL220. If you need more explanation on certain functionalities, or information on unexplained functionalities, an online help manual is provided within the tool.



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