

Technical Guide

Comunicação OPC UA entre Node-RED e PLCnext



PLCnext Technology 

Designed by PHOENIX CONTACT



PLCnext Control



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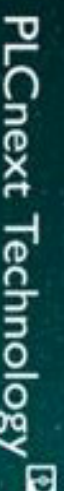
Configurações no PLCnext

O primeiro passo é realizar a instalação do Node-Red no PLCnext. Temos um guia dedicado que aborda esse assunto e mostra todas as etapas necessárias para esta instalação.

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Instalação do Node-Red no PLCnext





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INSPIRING INNOVATIONS

Configurações no PLCnext

As variáveis que serão usadas na comunicação, deverão ter seu check box OPC marcadas.

Configurações no PLCnext

Configuração do OPC UA no PLCnext.

PLANT

Project

axc-f-2152-1 : AXC F 2152

PLCnext (2)

PLC

HMI Webserver

OPC UA

Profinet (0)

Axioline F (0)

OPC UA / OPC UA Server

OPC UA

Basic settings

Security

Discovery server

File system

Endpoint

DNS name / IP address:

Information model

Visibility of variables:

Subscription settings

Subscription kind:

axc-f-2152-1

Marked

Direct Read

Configurações no PLCnext

PLANT

Project

axc-f-2152-1 : AXC F 2152

PLCnext (2)

PLC

HMI Webserver

OPC UA

Profinet (0)

Axioline F (0)

OPC UA / OPC UA Server

OPC UA

Basic settings

Security

Discovery server

File system

OPC UA

Server certificate

Certificate:

Self signed by controller

Subject 1

Type of subject:

Not set

Subject 2

Type of subject:

Not set

Subject 3

Type of subject:

Not set

Subject 4

Type of subject:

Not set

Security policies

Enable basic 128 RSA15 algorithm:

No

Enable basic 256 algorithm:

No

Enable basic 256 SHA256 algorithm:

Yes

Enable AES 128 SHA256 RSA OAEP algorithm:

Yes

Enable AES 256 SHA256 RSA PSS algorithm:

Yes

Application

Use the truststore for client authentication:

☒

Check application URI against client certificate:

☒

Configurações no Node-Red

A comunicação entre o Node-Red e o PLCnext será feita via OPCUA e por isso será necessário que o node *opcua* esteja instalado. A instalação deste node, também é abordada no mesmo guia de instalação do Node-Red.

node-red-contrib-opcua 0.2.256

A Node-RED node to communicate via OPC UA based on node-opcua library.

npm install node-red-contrib-opcua

downloads 3.2k/month

npm package 0.2.256

Node-RED OPC UA

node-red-contrib-opcua

Node Info

Version: 0.2.256

Updated 22 hours ago

License: Apache-2.0

Rating: 4.3 ★ 4 🐾

View on npm

View on GitHub

Actions

Rate: 🗳️ ☆ ☆ ☆ ☆ ☆

Downloads

904 in the last week

Nodes

OpCUa-Item

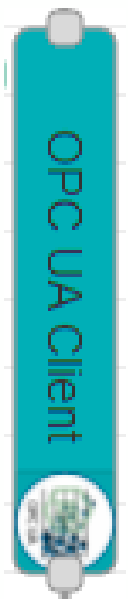
OpCUa-Client

OpCUa-Browser

OpCUa-Server

OpCUa-Endpoint

Configurações do node *OPC UA Client*



Edit OpCua-Client node

Delete Cancel Done

Properties

Endpoint	Add new OpCua-Endpoint...
Action	READ
Certificate	None, use generated self-signed certificate
Local certificate file with absolute path	selfSigned.pem
Local private key file with absolute path	private_key.pem
PKI certificate folder	
Name	

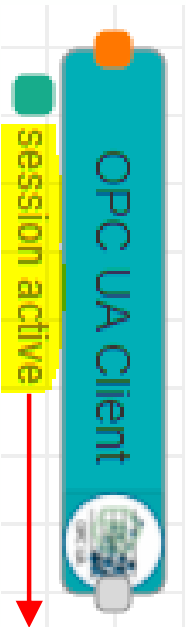


Edit OpCua-Client node > Edit OpCua-Endpoint node

Delete Cancel Update

Properties

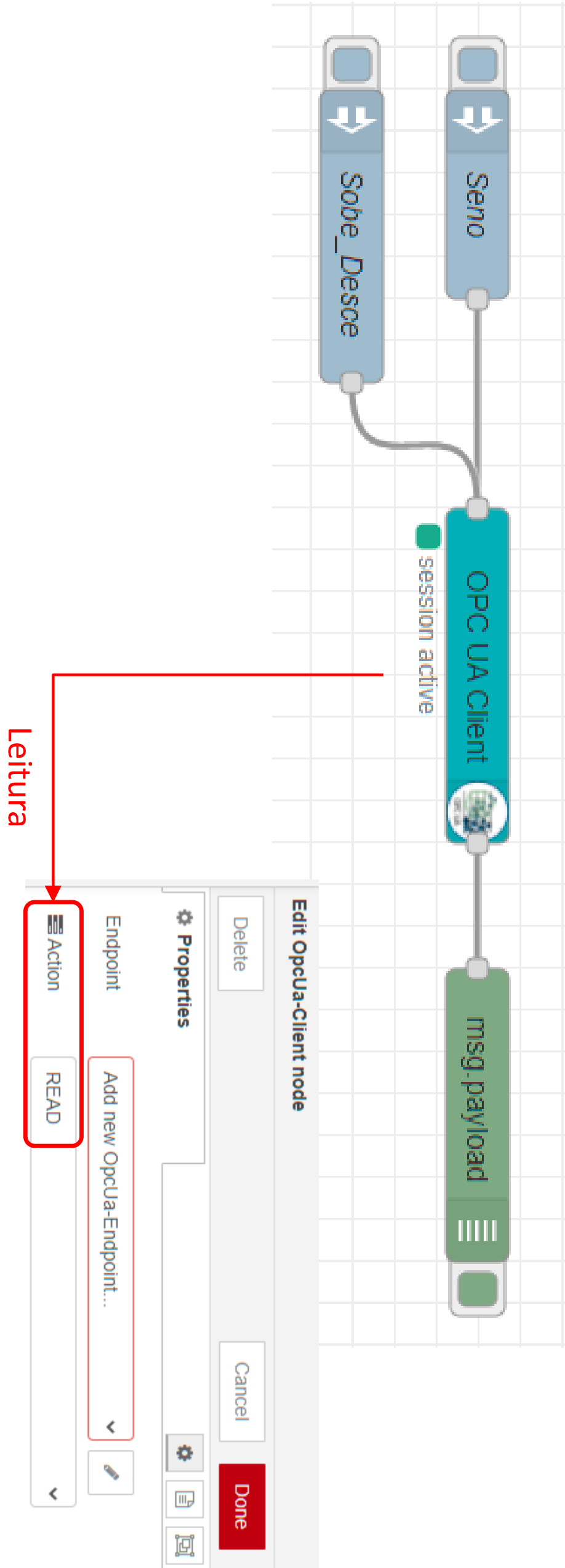
Endpoint	opc.tcp://192.168.1.100:4840
SecurityPolicy	Basic256Sha256
SecurityMode	Sign
☒ use credentials	
User	admin
Password	*****



Seção ativa
Comunicação OK

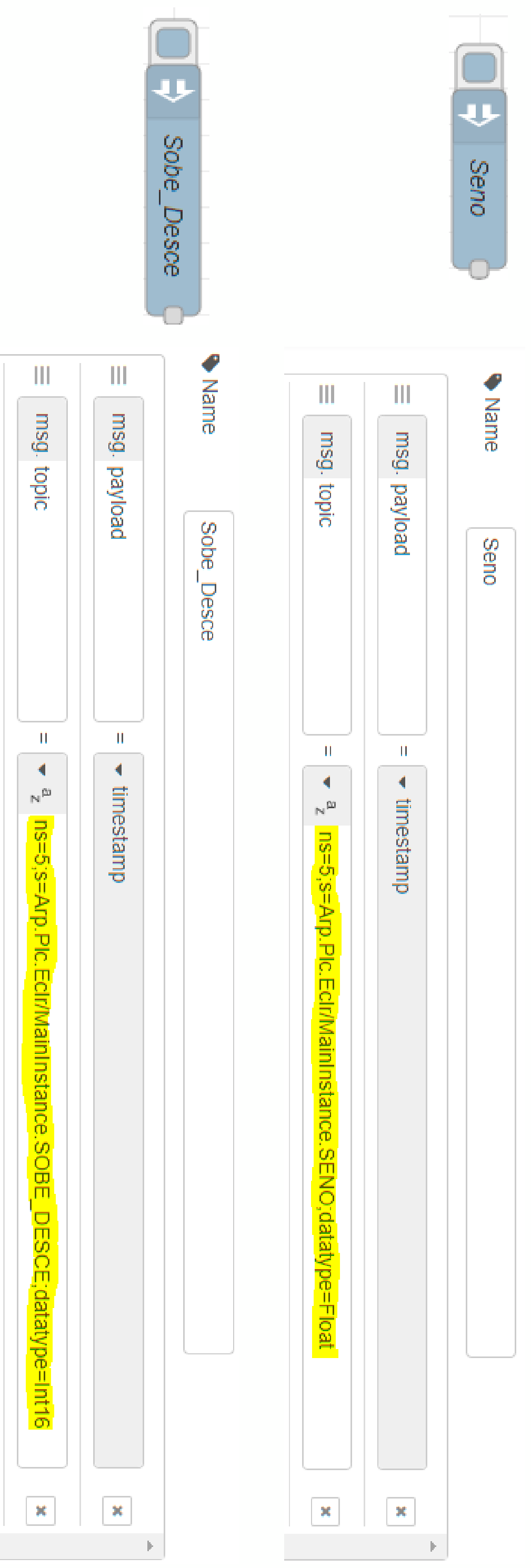
Configurações no Node-Red

Configuração do node OPC UA Client para LEITURA.



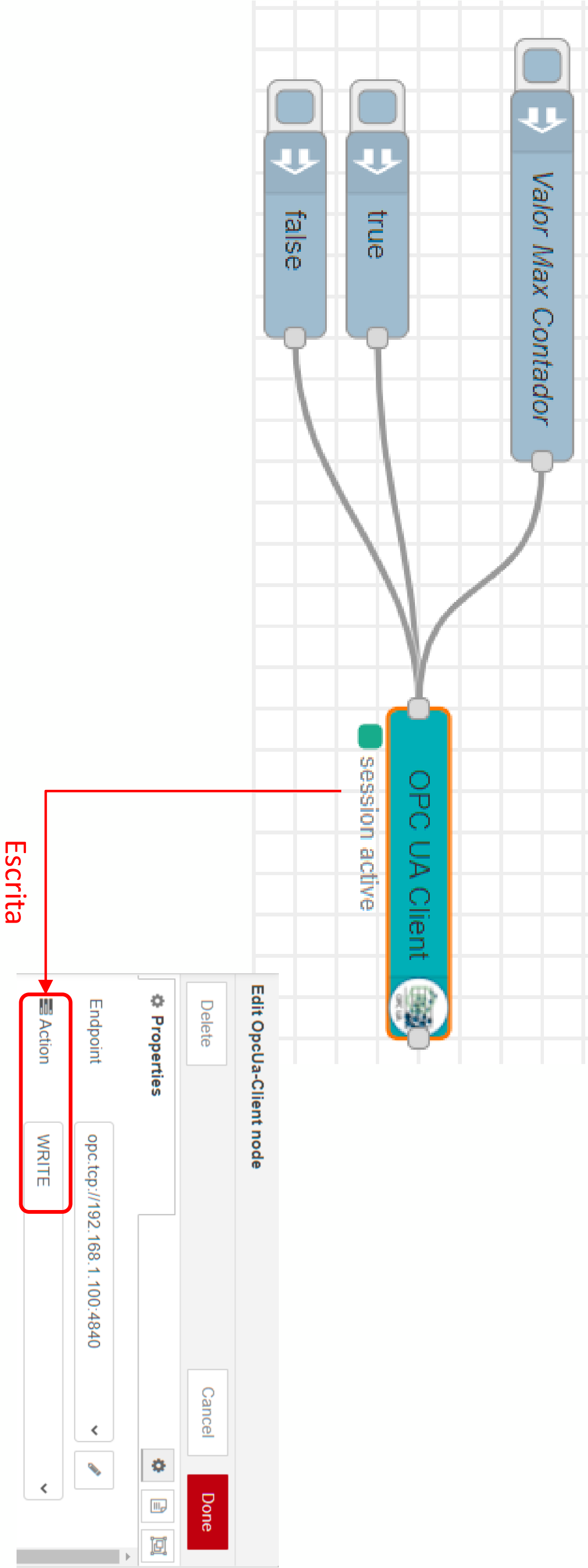
Configurações no Node-Red

Na lógica foi adicionado dois *inject* referente as variáveis a serem lidas e um *debug* para visualizarmos os valores das variáveis lidas.



Configurações no Node-Red

Configuração do node OPC UA Client para ESCRITA.



Configurações no Node-Red

Nos node *inject* são configurados para a escrita na variáveis via OPC UA.

◆ Name

Valor Max Contador

≡ msg. payload

=

▼ 0g

123

≡ msg. topic

=

▼ a_z

ns=5;s=Arp.Plc.Eclr/MainInstance.VRL_MAX_SOB_E;datatype=Int16

≡ msg. payload

=

▼ true

≡ msg. topic

=

▼ a_z

ns=5;s=Arp.Plc.Eclr/MainInstance.ACT_SOB_DESCE;datatype=Boolean

≡ msg. payload

=

▼ false

≡ msg. topic

=

▼ a_z

ns=5;s=Arp.Plc.Eclr/MainInstance.ACT_SOB_DESCE;datatype=Boolean

➡ Valor Max Contador

➡ true

➡ false

Configurações do node *Inject*

Para facilitar o preenchimento do **Topic** no node **Inject**, utilizamos o software UA Expert que estabelece uma comunicação OPC UA com o CLP e lista todas as variáveis suas respectivas informações.



Configurações do node *Inject*

Project

Project

Servers

Documents

Data Access View

eUAServer@axc-f-2152-1

Address Space

No Highlight

Root

Objects

DeviceSet

DeviceTopology

NetworkSet

PLCnext

Arp.Plc.Eclr

MainInstance

SENO

SOBE_DESCE

Server

Types

Data Access View

#	Server	Node Id	Display Name	Value
1	eUAServer@axc-f-21...	NS5[String]Arp.Plc.Eclr/MainInstance.SENO	SENO	0.0188586
2	eUAServer@axc-f-21...	NS5[String]Arp.Plc.Eclr/MainInstance.SOBE_DESCE	SOBE_DESCE	3

Attributes

Attribute

Nodeid

NamespacelIndex

IdentifierType

Identifier

NodeClass

BrowseName

DisplayName

Description

WriteMask

UserWriteMask

RolePermissions

UserRolePermissions

AccessRestrictions

Value

SourceTimestamp

SourcePicoSeconds

ServerTimestamp

ServerPicoSeconds

StatusCode

Value

Data Type

NamespacelIndex

IdentifierType

Identifier

ValueRank

Value

ns=5;s=Arp.Plc.Eclr/MainInstance.SENO

5

String

Arp.Plc.Eclr/MainInstance.SENO

Variable

5, "SENO"

"" , "SENO"

"en", "Float32"

0

0

BadAttributeIdInvalid (0x80350000)

BadAttributeIdInvalid (0x80350000)

BadAttributeIdInvalid (0x80350000)

19/01/2022 12:24:59.208

0

19/01/2022 12:24:59.208

0

Good (0x00000000)

0.158169

Float

0

Numeric

10 [Float]

-1 (Scalar)

Name

Seno

msg. payload

msg. topic

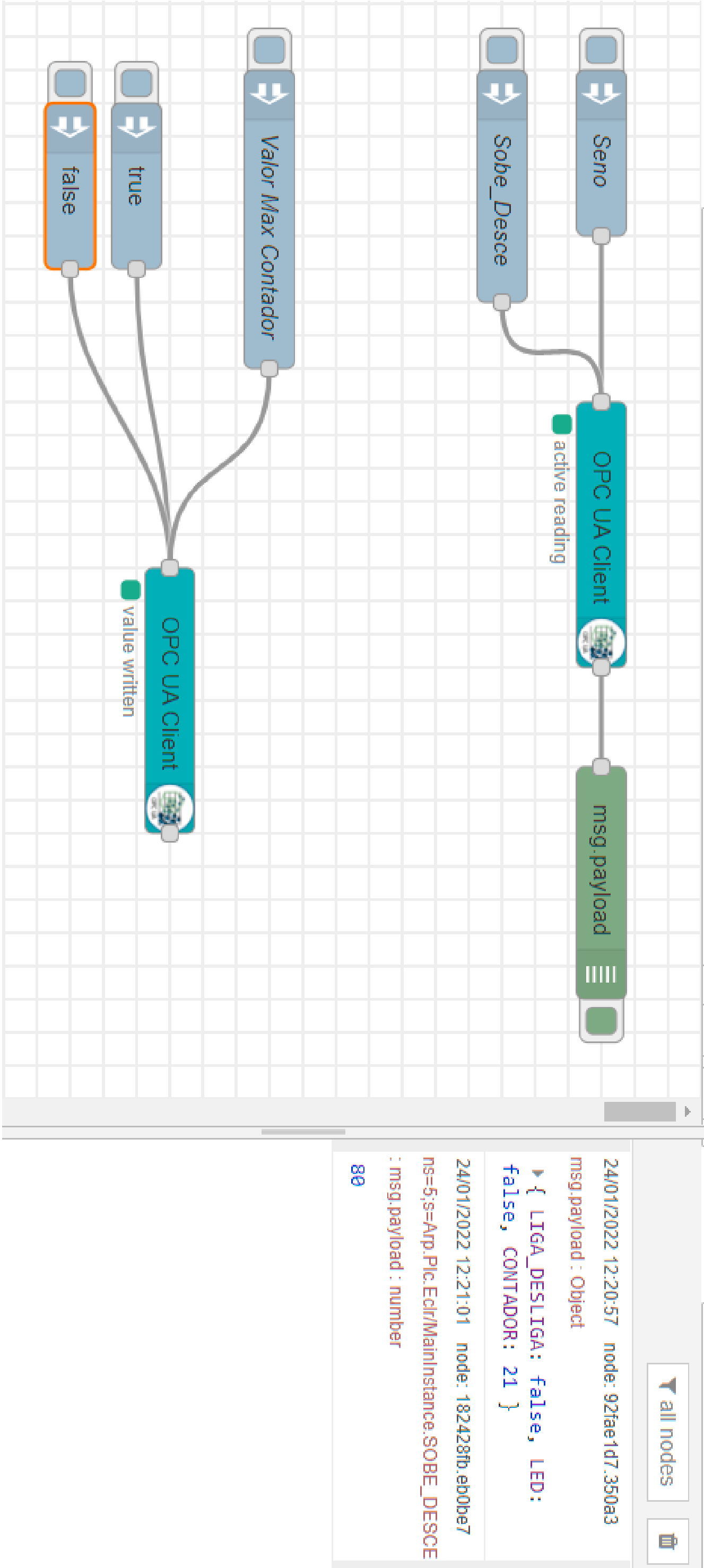
=

timestamp

=

ns=5;s=Arp.Plc.Eclr/MainInstance.SENO;datatype=Float

Leitura das variáveis do PLC via OPC UA



Obrigado...



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