

Ian BARNES  
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Cloudis Limited

## Company history

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- 1994 Company initially formed
- 30<sup>th</sup> anniversary this year
- Registered in the UK
- Work with companies in the marine/ process / power sectors
- First customer for cable management software was in 1996 (BAE Systems)

## Our Customers

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BAE SYSTEMS Marine Surface Ships Glasgow (UK)

BAE SYSTEMS Submarines Barrow in Furness (UK)

Huntington Ingalls (USA)

Babcock Limited (UK)

Austal (USA)

Groupe Navale Frigates (Lorient, France)

Groupe Navale Submarines (Cherbourg, France)

Navantia (Spain)

Global Maritime (Poland)

Netherlands Ministry of Defence

IHC Merwede (Netherlands)

## Our CMPIC Customers

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Rutgers University (USA)

Nuclear Power Company of India (India)

Alewijnse (Netherlands & Romania)

VT Halter Marine (USA)

Irving (Canada)

Fincantieri Marinette Marine (USA)

Seaspan (Canada)

Gibbs & Cox (USA)

Vigor (USA)

BAE Systems (Australia)

MEH Alliance (Hinkley C nuclear power plant)

# What has changed in our market in 30 years?

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Demand for shorter timescale delivery

Demand for more integrated design and production

Increased cost control

Availability of design and build data in ongoing maintenance

Movement away from in house maintained systems

Development of systems for greater control – EDM, PDM, EFMS

Increased need for software (data) security

## How has that influenced our business?

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Increased functionality in products themselves

Development of Configuration Management capability

Development of CMPIC Production functionality

- fully integrated with Design

- bar coding functionality

Development of CABCENTRIC (V9)

- fibre optic cable management

- used as fully configurable data management system

- web 'read only' version of CMPIC

Creation of REST API

Concentration on integrations – ERP, PDM, EFMS, ShipConstructor

# What do we mean by Cable Management?

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What kind of cable is it

Is it on a single build or a series of builds

Where does it go from and to

How long is it

How is it terminated

How full are the trays, hangers and transits it passes through

Does it need to be duplicated for redundancy

Do we need to amend its properties, or its route, during design

Does the system need to talk to others: CAD, PDM, FCS, cable sizing, one line diagrams, production planning etc

Is the design data used in production and if so, how

Does any of the data held need to be limited access

## What do we offer?

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CMPIC: database application for the routing and lifecycle management of cables from design through to installation.

CABCENTRIC: database application for all (inc.fibre optic) cable management where connectivity, signals, systems are key

Both are multi-user, multi-project systems.

Both use standard Oracle development tools and database

Both can co-exist in the same schema or separate

Cables and equipment in both can be seen or obscured as needed

# What is CABCENTRIC?

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Developed by Cloudis  
Oracle database for data vault  
Uses Java and SQL

All data is in the database inc. attributes, permissions, users,  
text colours etc etc

Which means an enormous amount of flexibility for  
development and customisation

Has been used to create electrical related databases for  
documenting entire infrastructures (Rutgers University's 17  
sites) and Fibre Optic cable management

# What is CMPIC?

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CMPIC consists of 2 modules:

## The *Design Module*

- schedule devices and cables
- route the cables – automatic, semi-automatic, manual
- design terminate them
- create Pull Sheets and Termination
- manage change control.
- Configuration Management

# What is CMPIC?

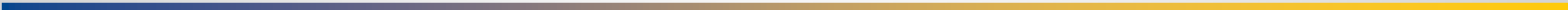
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## The *Production Module*

- takes the data created in the Design Module
- create and track Work Packages of cables and equipment
- create Work Packages (work orders, production orders) using
- selection filters to select cables for inclusion.
- manage drum optimisation and cable cutting
- manage installation and commissioning.



ENGINEERING SOFTWARE



[-][Top][2D Wireframe]

**Equipment Library**

Equipment Stock

New Stock

Equipment Stock

Export	Equipment
<input type="checkbox"/>	Enter Filter Text
<input type="checkbox"/>	Equipment
<input type="checkbox"/>	MSB

SCEQUIPMENT

**General**

TrueColor  ByLayer

Layer 0

Linetype \_\_\_\_\_ ByLayer

LinetypeScale 1.0000

PlotStyleName ByColor

Lineweight \_\_\_\_\_ ByLayer

Transparency ByLayer

Hyperlinks

Material ByLayer

**Data**

Entity Status OK

PWBS PROJECT/101/Unassigned Equipment

Part GUID {631D50D2-61DC-450E-BA58-C61A5D6CFAD9}

**Geometry**

**Spool Information**

**Stock Attributes**

Description Main switchboard

Stock Name MSB

**Part Attributes**

CG Point x=-1042.4635, y=3283.8330, z=0.0000

Compartments A002

Finishes <None>

Clear Filter Expand All

switchboard

50000 g

100000 mm<sup>2</sup>

0 mm

CMPIC R6.12.07 [ILD01,1]

WCS



COMPARTMENT MANAG...

PROPERTIES

New Folder New Compartment New Volume Delete Pick Min Pick Max Pick Object

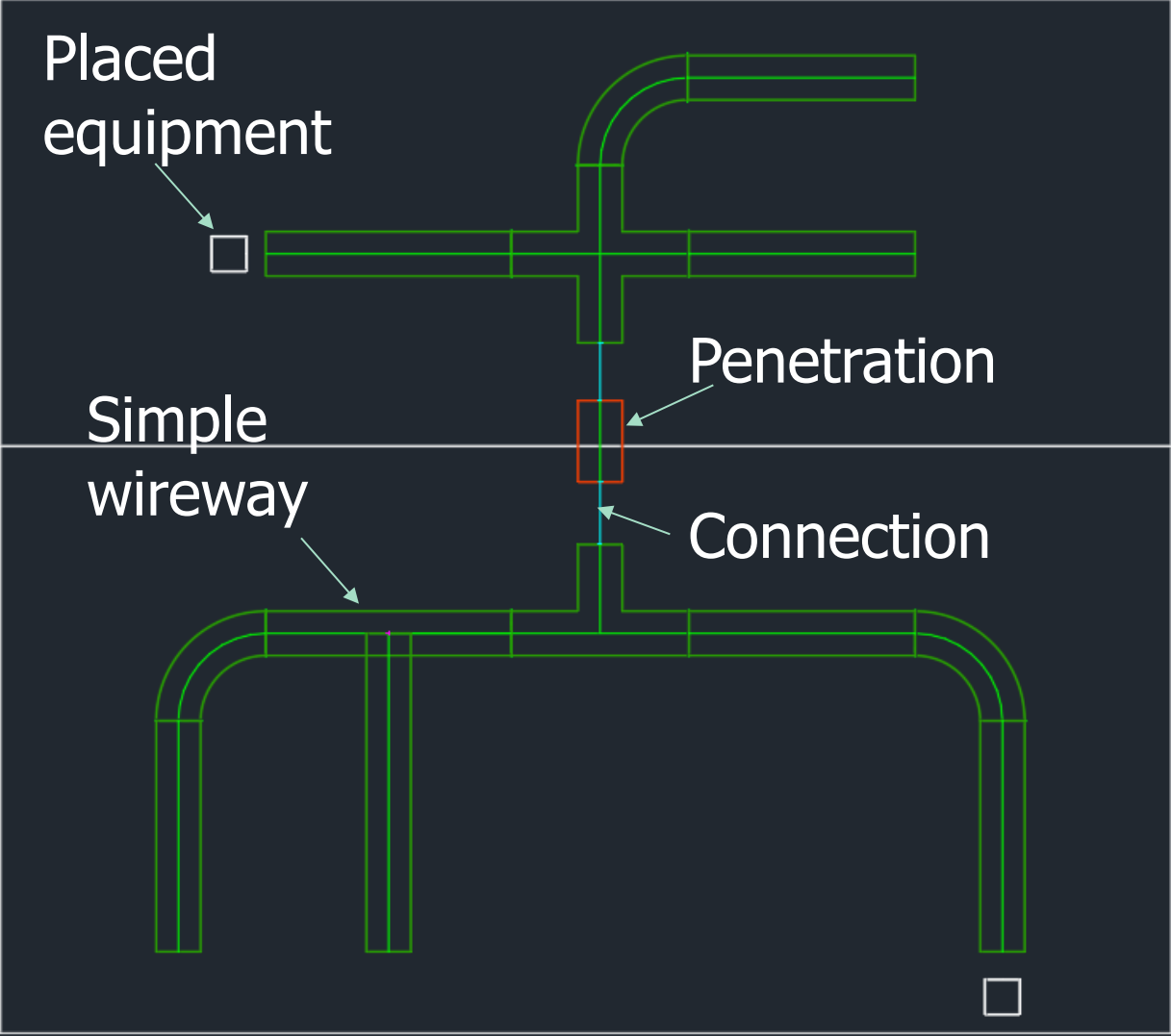
Export	Name	Show	Min L	Min T	Min V	Max L	Max T	Max V
<input type="checkbox"/>	Enter Filter Text	<input type="checkbox"/>	Enter Filter	Enter Filter	Enter Filter	Enter Filter	Enter Filter	Enter Filter
<input type="checkbox"/>	ILD01	<input type="checkbox"/>						
<input type="checkbox"/>	Compartments	<input type="checkbox"/>						
<input type="checkbox"/>	A001	<input type="checkbox"/>	-2448.610	-1171.642	-400.000	4245.816	2185.028	400.000
<input type="checkbox"/>	(899,507,0)	<input type="checkbox"/>	-2448.610	-1171.642	-400.000	4245.816	2185.028	400.000
<input type="checkbox"/>	A002	<input type="checkbox"/>	-2448.610	2185.028	-400.000	4245.816	4740.429	400.000
<input type="checkbox"/>	(899,3463,0)	<input type="checkbox"/>	-2448.610	2185.028	-400.000	4245.816	4740.429	400.000

[-][Top][2D Wireframe]

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CMPIC R6.12.07 [ILD01,1]

WCS

TOP

[ - ] [Top] [2D Wireframe]

ILD01-HQ CMIF12.6.7 - Batch Job Log

ILD01-HQ CMNF01.%I% - Nodal Network

Normal Segments      Status Filter: All  
 Point Segment(s)  
 Both      Query Criteria: All

From Node	Room	To Node	Room	Segment Type	Tiers Usable	Area	Length [m]	Segregation	Pen	Pt. Seg	Segment ID	Raceway	Fill Type	Span [m]	Used	Inst
N00591	A001	N00588	A001	CT100	1		1.82	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0001	POWER	3	0.00	<input type="checkbox"/>	N
N00591	A001	N00595	A001	CT100	1		0.70	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0020:2:1	POWER	3	0.00	<input type="checkbox"/>	N
N00591	A001	N00601	A001	CT100	1		0.70	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0020:2:0	POWER	3	0.00	<input type="checkbox"/>	N
N00592	A001	N00605	A001	CT100	1		1.32	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0005	POWER	3	0.00	<input type="checkbox"/>	N
N00595	A001	N00596	A001	CT100	1		0.79	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0022	POWER	3	0.00	<input type="checkbox"/>	N
N00596	A001	N00584	A001	CT100	1		1.32	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0024	POWER	3	0.00	<input type="checkbox"/>	N
N00597	A002	N00581	A002	CT100	1		1.02	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0014:2:3	POWER	3	0.00	<input type="checkbox"/>	N
N00597	A002	N00585	A002	CT100	1		0.79	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0026	POWER	3	0.00	<input type="checkbox"/>	N
N00599	A001	N00587	A001	CT100	1		1.29	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0002	POWER	3	0.00	<input type="checkbox"/>	N
N00601	A001	N00580	A001	CT100	1		1.02	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0019	POWER	3	0.00	<input type="checkbox"/>	N
N00601	A001	N00599	A001	CT100	1		1.02	P	<input type="checkbox"/>	<input type="checkbox"/>	POWER-0019:0:2	POWER	3	0.00	<input type="checkbox"/>	N
N00603	A002	N00586	A001	PEN	1	254X152	10.00	PCS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PEN-0026	PEN-0026	4	0.00	<input type="checkbox"/>	N

Update      Update      Total Length[m]      33.34

Cable ID	Rule	Segment/Node ID	Tier ID	Direction	Priority	Status

Segregation Codes    Part ID    Tiers    Status

Segregation Codes	Part ID	Tiers	Status
C	Control		
P	Power		
S	Signal		

Notes    < History >    Report    Create CSV File

[-][Top][2D Wireframe]

Draw Edit Near-nodes Upload

Query CMPIC network

Draw Clear All Clear Areas Clear Batch

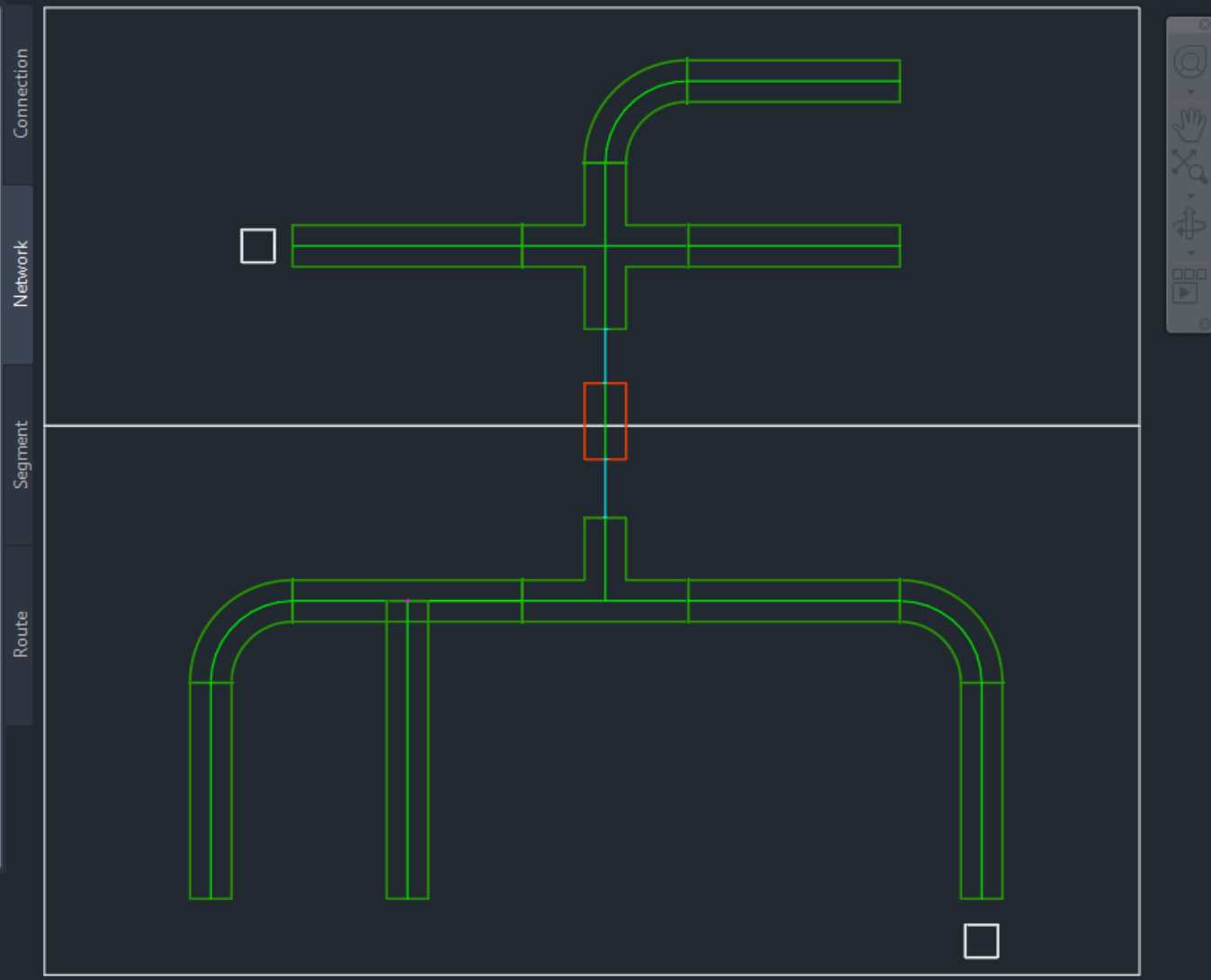
0:Room Segregation Nodes Segments

Primary  Secondary  Both

Devices

Highlight

- By segregation/type
- Routed segments  Analysis
- Approved segments
- Over-full segment: > %
- Locked segments



CMPIC R6.12.07 [ILD01,1]



[-][Top][2D Wireframe]

Draw Edit Near-nodes Upload

Query CMPIC network

Draw Clear All Clear Areas Clear Batch

0:Room -

Segregation -

Nodes	21
Segments	24

Primary  Secondary  Both

Devices	<input checked="" type="checkbox"/> 2
---------	---------------------------------------

Highlight

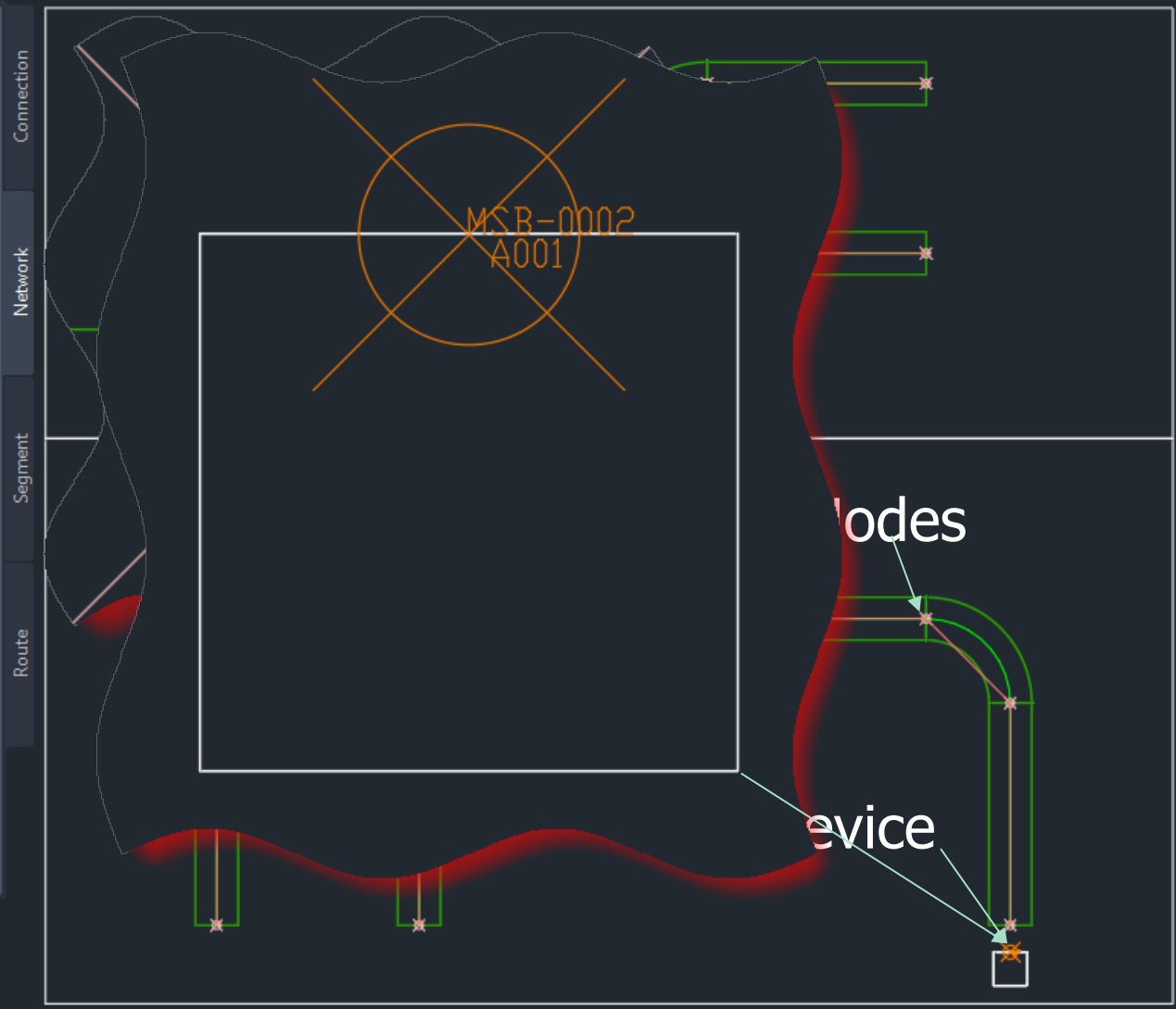
By segregation/type

Routed segments  Analysis

Approved segments

Over-full segment: > %

Locked segments




CMPIC R6.12.07 [ILD01,1]



[ - ] [ Top ] [ 2D Wireframe ]

**Cable details**

Cable 

From device

From node

To device

To node

Segregation

Cable Type

Status

Query filter

Routed

Routed

Auto-routed

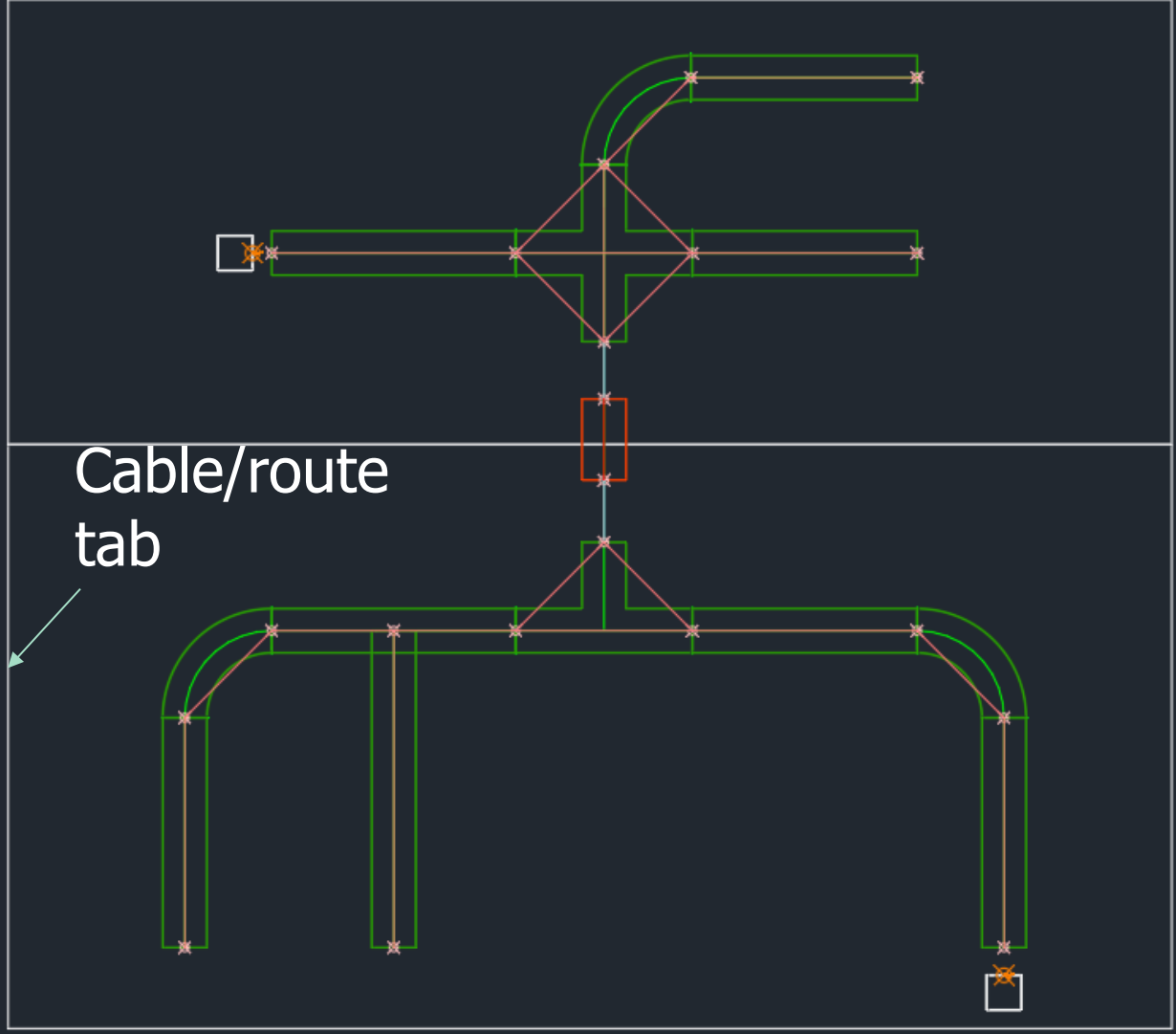
Off-route

Connection

Network

Segment

Route



Cable/route  
tab

CMP/IC R6.12.07 [ILD01,1]



Cable details

Cable C1

From device MSB-0001

From node

To device MSB-0002

To node

Segregation P

Cable Type 11LS004G0311N

Status 0 DSNR

Current **Autoroute** Manual Rules Prefs

Scope  Whole  Partial  Breaks

From node

To node

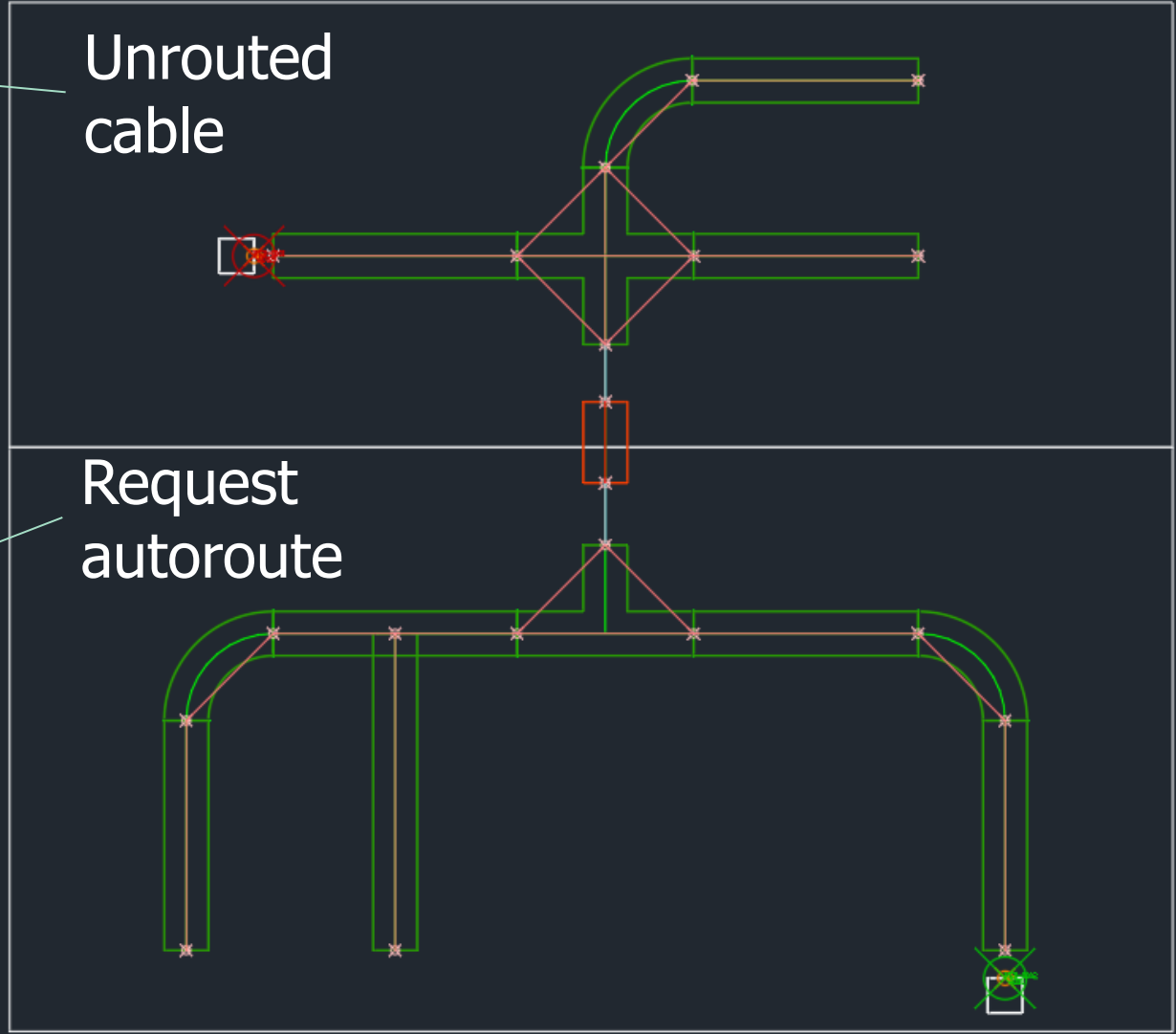
Request # Length [m]

Status **No autoroute**

Approve


Unrouted cable

Request autoroute




CMPIC R6.12.07 [ILD01,1]



Connection **Service** Request Daemon **CMPIC Autorouter**

Service name: CMPIC Autorouter ILD@CMPIC007

Status: Running

 CMPIC Autorouter ILD@CMPIC007 routing log

```
2024-10-10 09:17:03 +0100 - 00070 N00599 N00587
2024-10-10 09:17:03 +0100 - 00080 N00587 N00592
2024-10-10 09:17:03 +0100 - 00090 N00592 N00605
2024-10-10 09:17:03 +0100 - 00100 N00605 @-TDEV-@
2024-10-10 09:17:03 +0100 - Request 3392391 SUCCESSFUL for cable ILD01.HQ C1
2024-10-10 09:17:03 +0100 - Elapsed time: 2 seconds
2024-10-10 09:17:03 +0100 - Nodes visited: 23
2024-10-10 09:17:03 +0100 - Search passes: 23
2024-10-10 09:17:03 +0100 - Route length: 20.76
2024-10-10 09:17:03 +0100 - Route segments: 11
2024-10-10 09:17:03 +0100 - ***** REQUEST PROCESSED *****
```

[-][Top][2D Wireframe]

**Cable details**

Cable

From device

From node

To device

To node

Segregation

Cable Type

Status

Current **Autoroute** Manual Rules Prefs

Scope  Whole  Partial  Breaks

From node

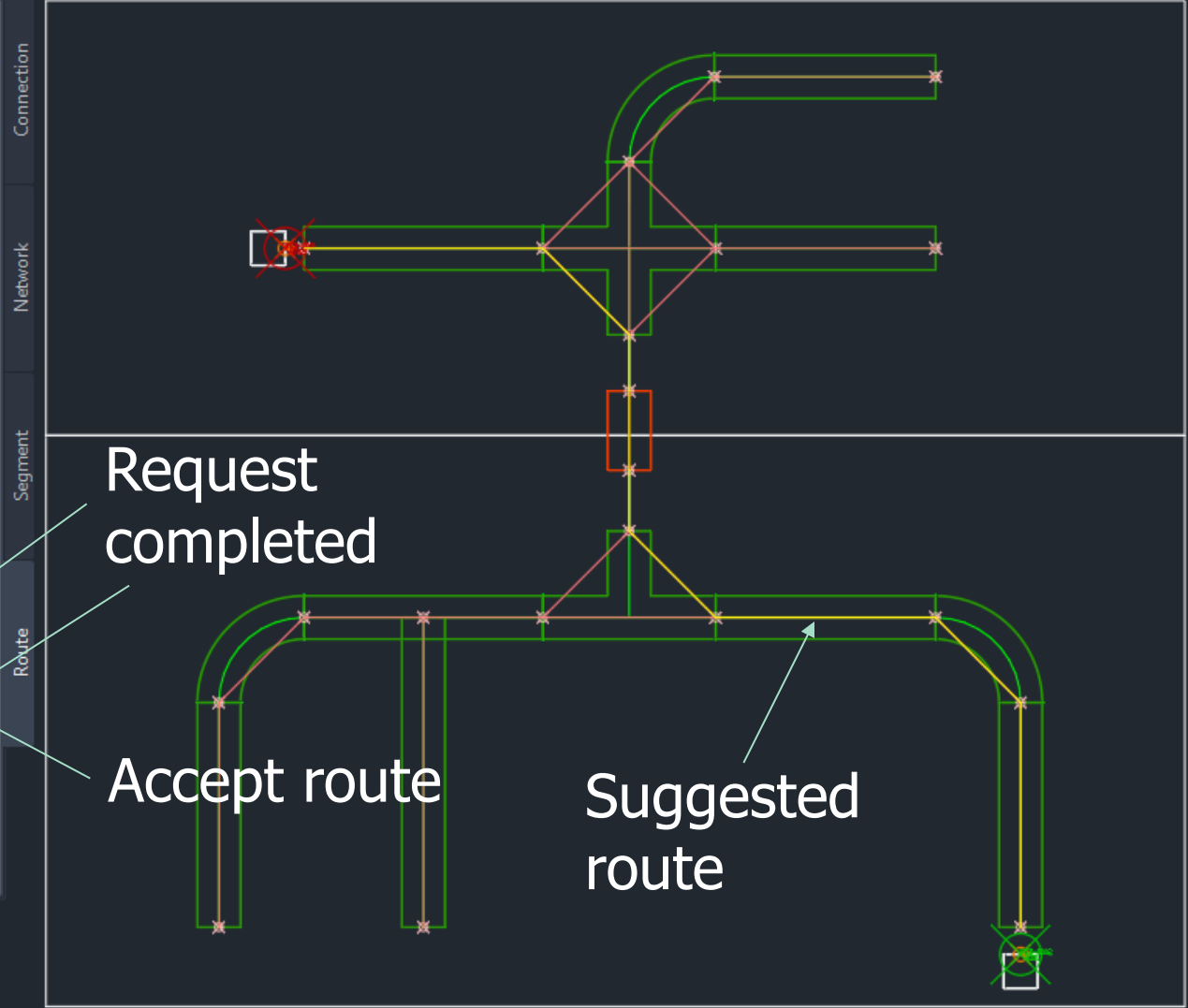
To node

Request #  Length [m]

Status **Y: Routing completed successfully**

Approve

Sequence	Seg ID	From node	To
<input type="checkbox"/> 20	POWER-0015	N00582	Ni
<input type="checkbox"/> 30	POWER-0014:0:3	N00581	Ni
<input type="checkbox"/> 40	59466	N00583	Ni
<input type="checkbox"/> 50	...	...	...



Request completed

Accept route


Suggested route

CMPIC R6.12.07 [ILD01,1]



[-][Top][2D Wireframe]

**Cable details**

Cable  C1

From device MSB-0001

From node N00582 0.132

To device MSB-0002

To node N00605 0.192

Segregation P

Cable Type 11LS004G0311N

Status 25 DRCNA

---

Current **Autoroute** Manual Rules Prefs





Scope  Whole  Partial  Breaks

From node

To node

Request # Length [m]

Status **OK: route accepted**

    Approve 

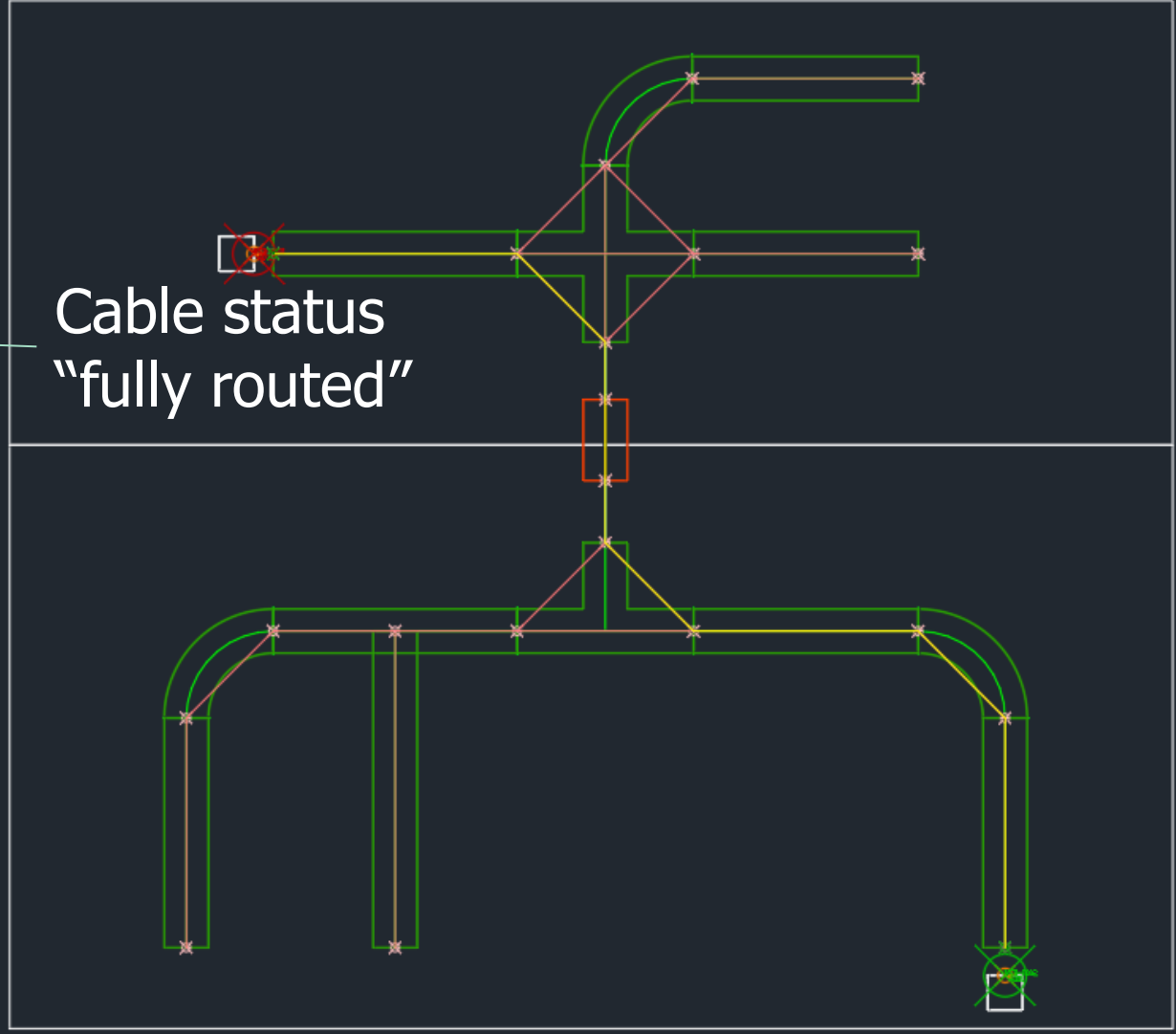
Connection

Network

Segment

Route

Cable status  
"fully routed"



CMPIC R6.12.07 [ILD01,1]



Cable details

Cable C1

From device MSB-0001

From node N00582 0.132

To device MSB-0002

To node N00605 0.192

Segregation P

Cable Type 11LS004G0311N

Status 25 DRCNA

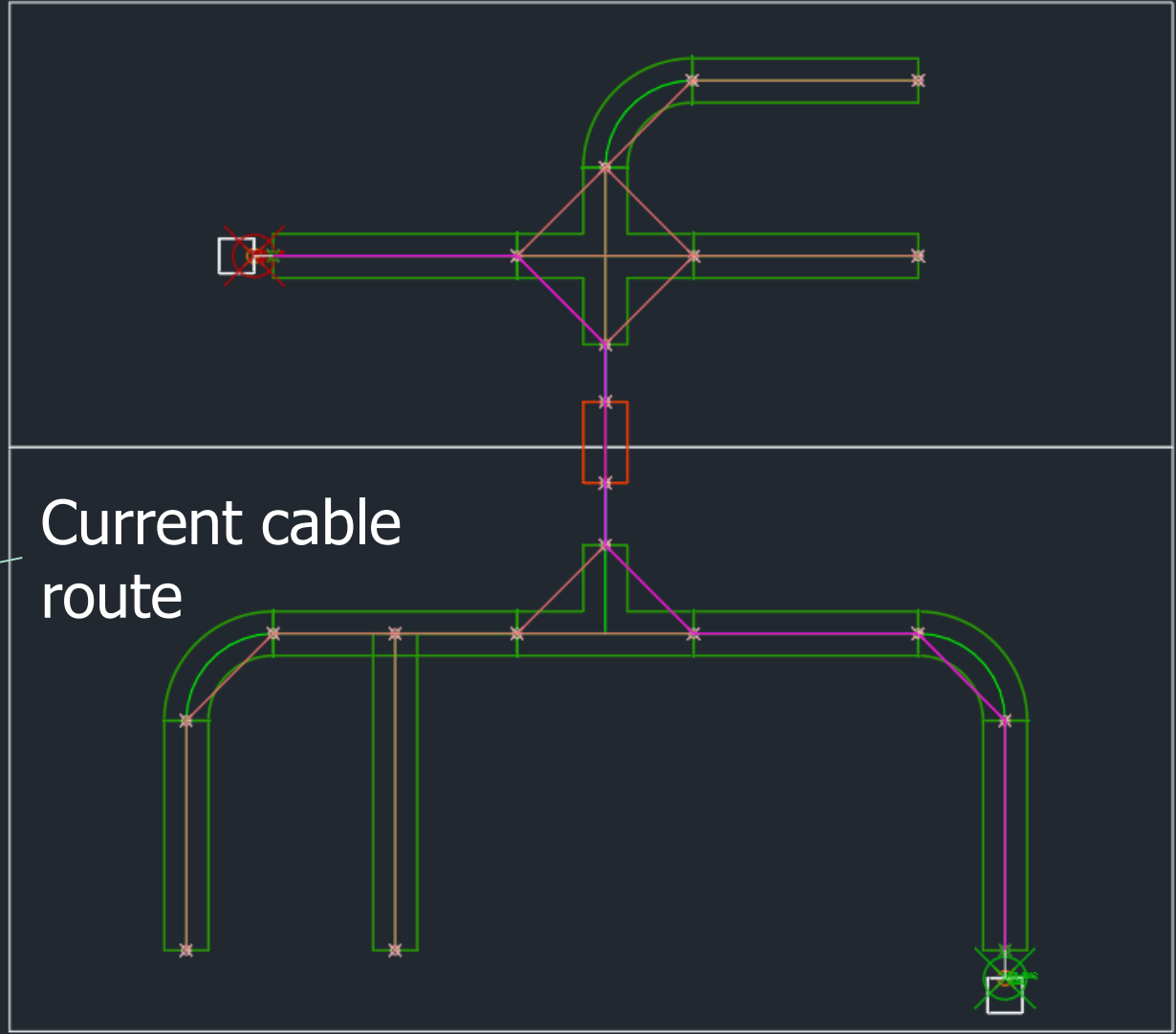
Current **Autoroute** Manual Rules Prefs

Length [m] 18.74

**Clear All**

Sequence	Seg ID	From node	To r
<input type="checkbox"/> 10	POWER-0015	N00582	N00
<input type="checkbox"/> 20	POWER-0014:0:3	N00581	N00
<input type="checkbox"/> 30	59466	N00583	N00
<input type="checkbox"/> 40	PEN-0026	N00603	N00
<input type="checkbox"/> 50	59459	N00586	N00
<input type="checkbox"/> 60	POWER-0019:1:2	N00580	N00
<input type="checkbox"/> 70	POWER-0002	N00599	N00
<input type="checkbox"/> 80	POWER-0023	N00587	N00
<input type="checkbox"/> 90	POWER-0005	N00592	N00

Connection  
Network  
Segment  
Route




Current cable route

CMPIC R6.12.07 [ILD01,1]



[-][Top][2D Wireframe]

ILD01-HQ CMIF12.6.7 - Batch Job Log
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**Job Details**

Job ID:  Tag:  Finished?  Timestamp:


Last status:

Message:

**Log text**

Segment change	Count
Deleted/reduced	2
<b>Cable status summary</b>	
<hr/>	
Cab status before	Status now
<hr/>	
DRCNA	DPRFNRT 1
<b>Cable status changes</b>	
<hr/>	
Cable ID	Vessel
Status before	Status now
<hr/>	
C1	1 DRCNA DPRFNRT D

Existing route retained




CMPIC R6.12.07 [ILD01,1]

TO

[-][Top][2D Wireframe]

**Cable details**

Cable  C1

From device MSB-0001

From node N00582 0.132

To device MSB-0002

To node N00605 0.192

Segregation P

Cable Type 11LS004G0311N

Status 0 DSNR

---

Current    Autoroute    Manual    Rules    Prefs

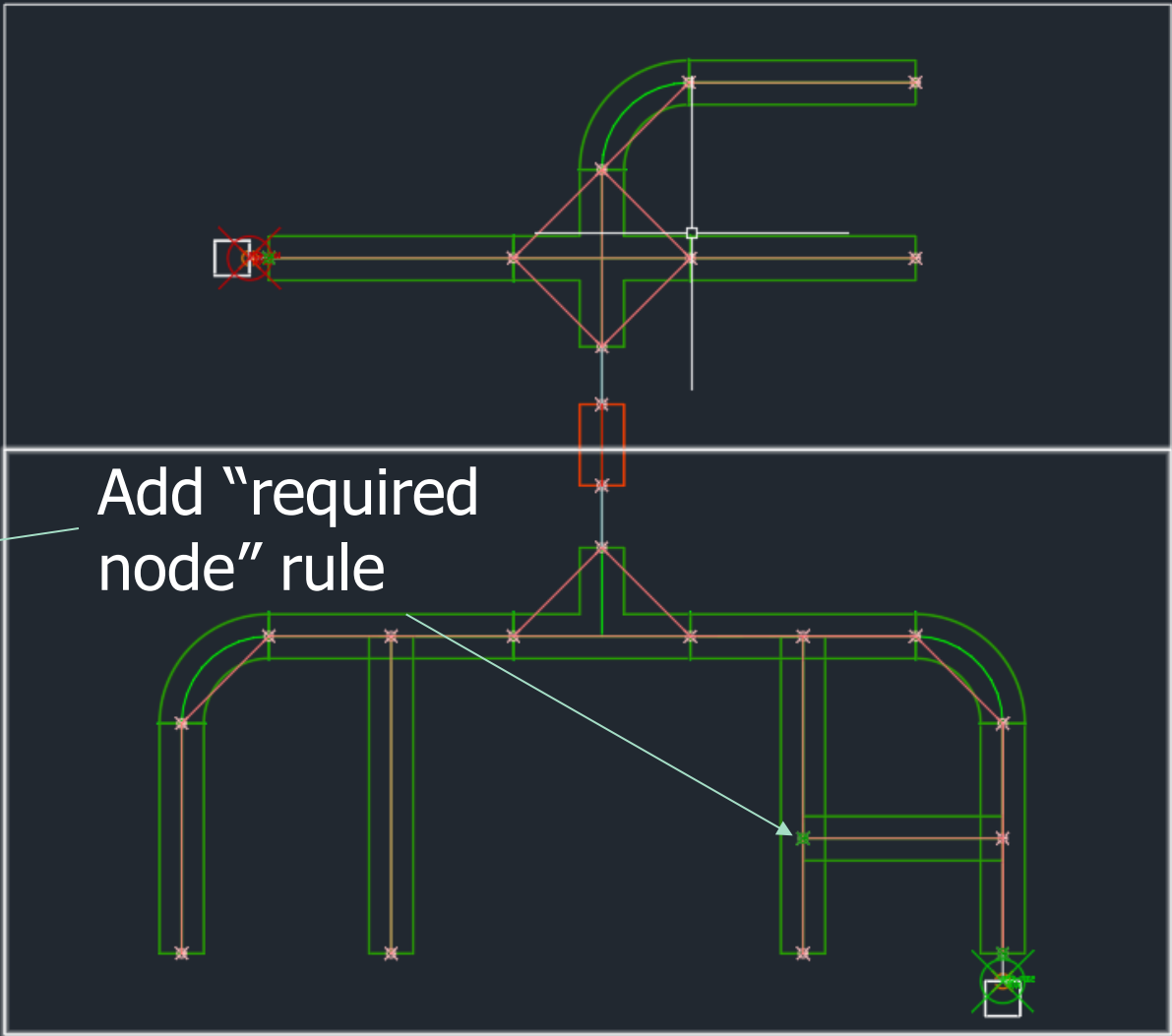
Type	Value	Priority	Direction	Enabled	P
Existing					
RN	N00613	1		Y	

Connection

Network

Segment

Route




Add "required node" rule

CMPIC R6.12.07 [ILD01,1]



[-][Top][2D Wireframe]

**Cable details**

Cable  C1

From device MSB-0001

From node N00582 0.132

To device MSB-0002

To node N00605 0.192

Segregation P

Cable Type 11LS004G0311N

Status 0 DSNR

---

Current **Autoroute** Manual Rules Prefs

Scope  Whole  Partial  Breaks





From node N00582

To node N00605

Request # 3392728 Length [m] 17.74

Status **Y: Routing completed successfully**

---

   Approve  

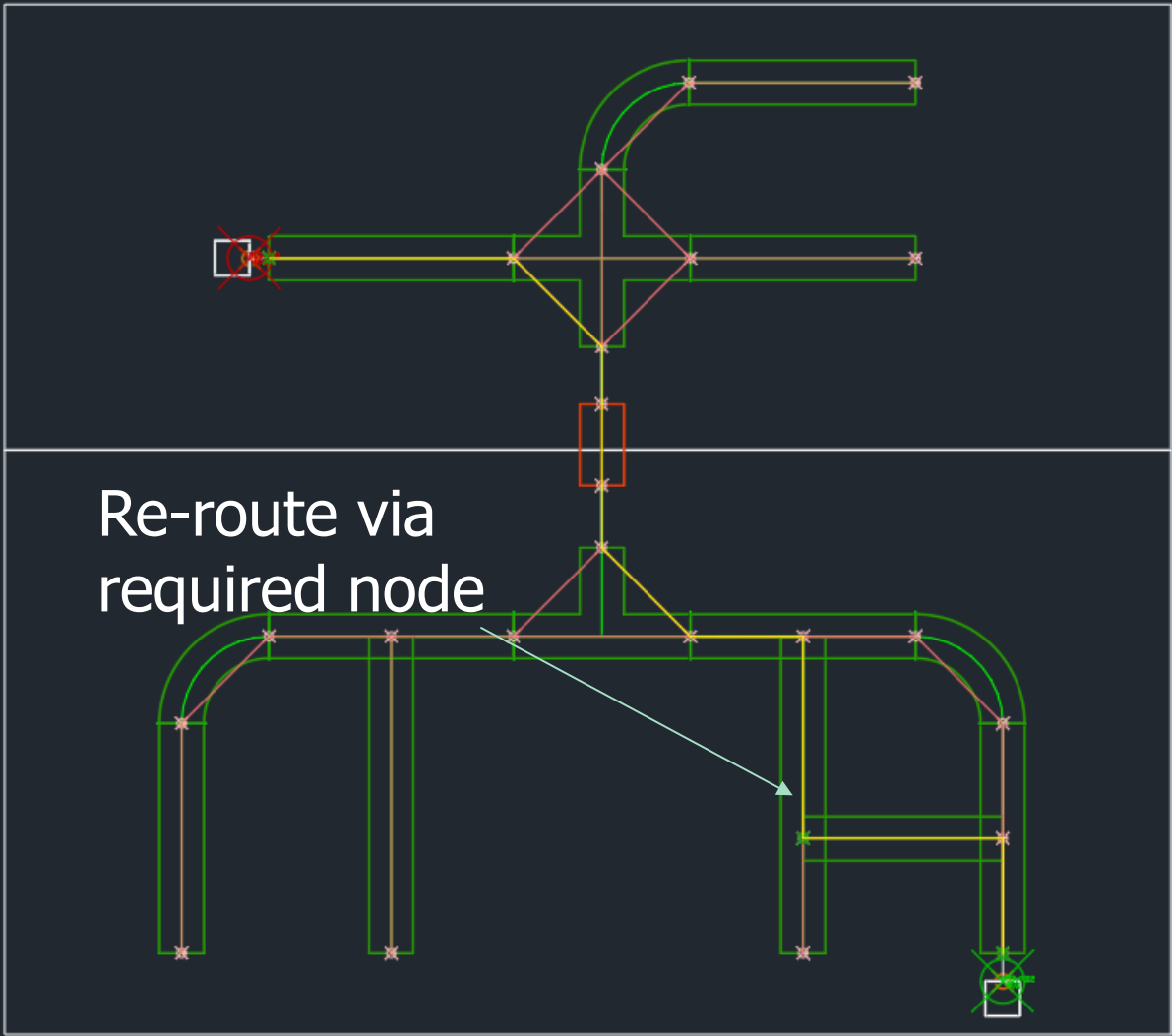
Sequence	Seg ID	From node	To
<input type="checkbox"/> 10	POWER-0015	N00582	Ni
<input type="checkbox"/> 20	POWER-0014:0:3	N00581	Ni
<input type="checkbox"/> 30	59466	N00583	Ni
<input type="checkbox"/> 40	DEAL 0026	N00603	Ni

Connection

Network

Segment

Route




CMPIC R6.12.07 [ILD01,1]



[-][Top][2D Wireframe]

**Cable details**

Cable  C1

From device MSB-0001

From node N00582 0.132

To device MSB-0002

To node N00605 0.192





Segregation P

Cable Type 11LS004G0311N

Status 25 DRCNA

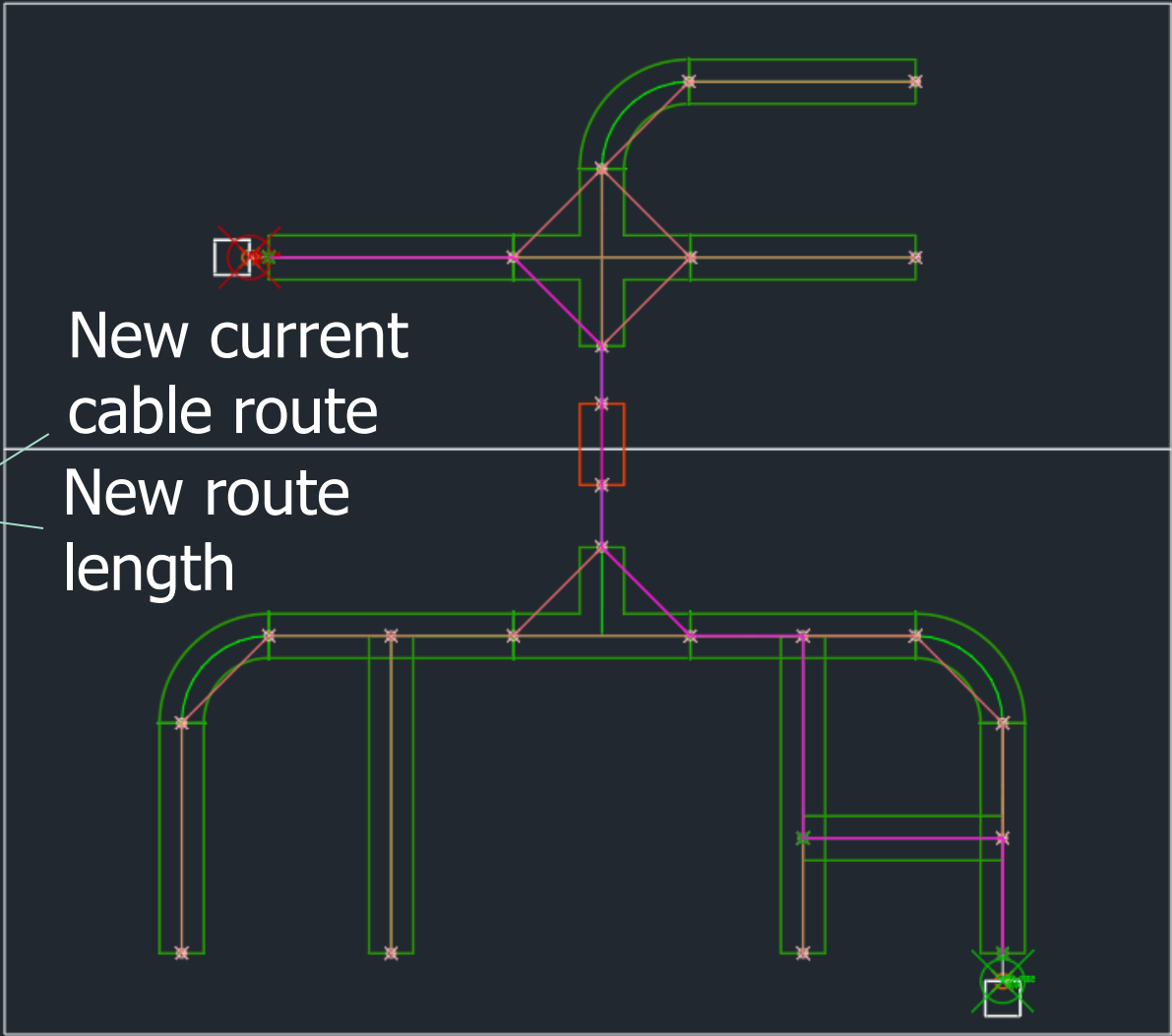
---

Current    Autoroute    Manual    Rules    Prefs

Length [m] 18.96    

[Clear All](#)

Sequence	Seg ID	From node	To node
<input type="checkbox"/> 10	POWER-0015	N00582	N00605
<input type="checkbox"/> 20	POWER-0014:0:3	N00581	N00605
<input type="checkbox"/> 30	59466	N00583	N00605
<input type="checkbox"/> 40	PEN-0026	N00603	N00605
<input type="checkbox"/> 50	59459	N00586	N00605
<input type="checkbox"/> 60	POWER-0019:1:2	N00580	N00605
<input type="checkbox"/> 70	POWER-0002:2:0	N00599	N00605
<input type="checkbox"/> 80	POWER-0006:2:0	N00612	N00605
<input type="checkbox"/> 90	POWER-0007	N00613	N00605
<input type="checkbox"/> 100	POWER-0005:2:1	N00614	N00605




CMP/IC R6.12.07 [ILD01\_1]



[-][SW Isometric][2D Wireframe]

**Cable details**

Cable  C1

From device MSB-0001

From node N00582 0.132

To device MSB-0002

To node N00605 0.192





Segregation P

Cable Type 11LS004G0311N

Status 25 DRCNA

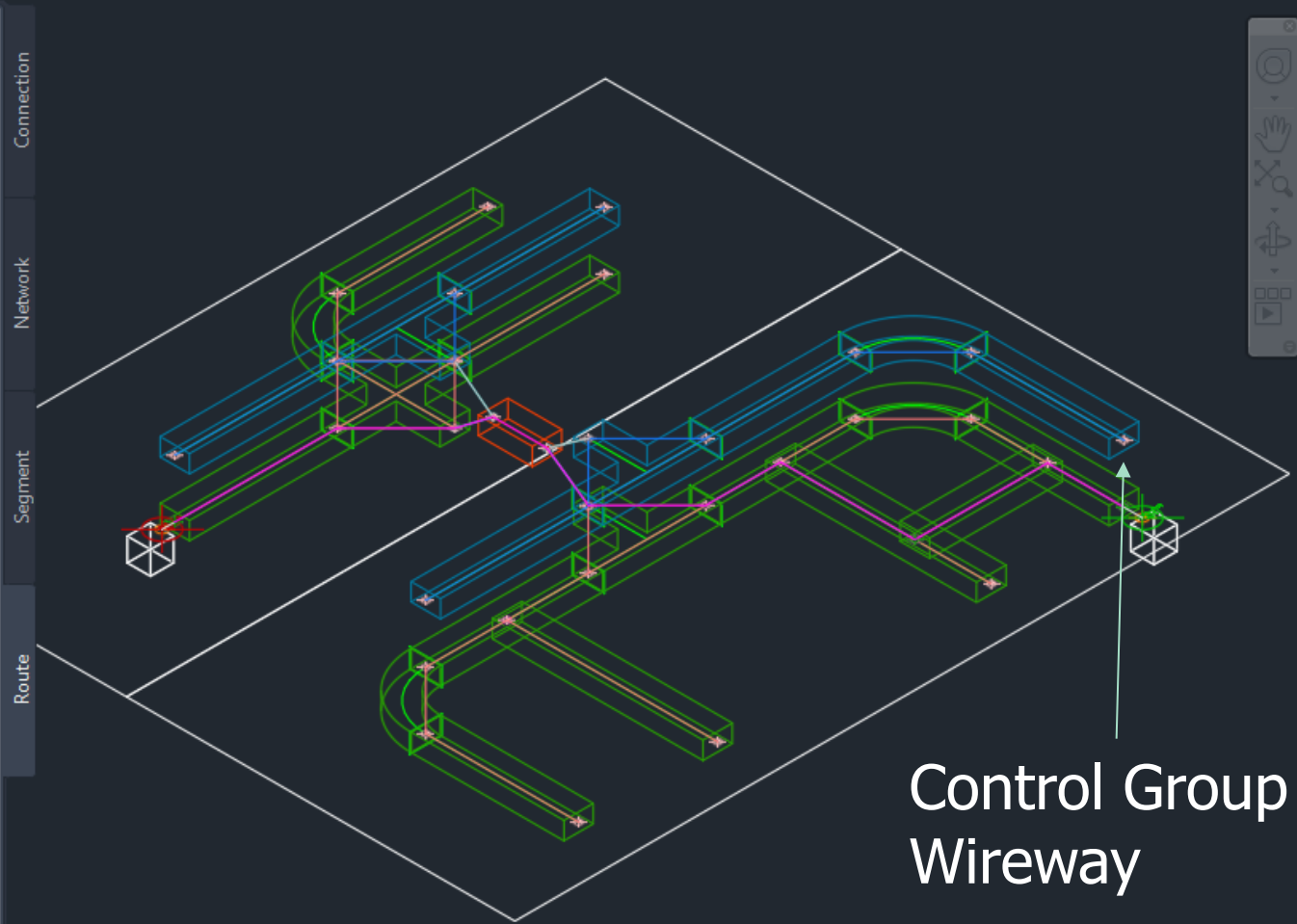
---

Current **Autoroute** Manual Rules Prefs

Length [m] 19.13    

**Clear All**

Sequence	Seg ID	From node	To r
<input type="checkbox"/> 10	POWER-0015	N00582	N00
<input type="checkbox"/> 20	POWER-0014:0:3	N00581	N00
<input type="checkbox"/> 30	59466	N00583	N00
<input type="checkbox"/> 40	PEN-0026	N00603	N00
<input type="checkbox"/> 50	59459	N00586	N00
<input type="checkbox"/> 60	POWER-0019:1:2	N00580	N00
<input type="checkbox"/> 70	POWER-0002:2:0	N00599	N00
<input type="checkbox"/> 80	POWER-0006:2:0	N00612	N00
<input type="checkbox"/> 90	POWER-0007	N00613	N00
<input type="checkbox"/> 100	POWER-0005:2:1	N00614	N00



Control Group Wireway

CMPIC R6.12.07 [ILD01,1]



[-][SW Isometric][2D Wireframe]

**Cable details**

Cable C1

From device MSB-0001

From node N00582 0.132

To device MSB-0002

To node N00605 0.192

Segregation P

Cable Type 11LS004G0311N

Status 25 DRCNA

---

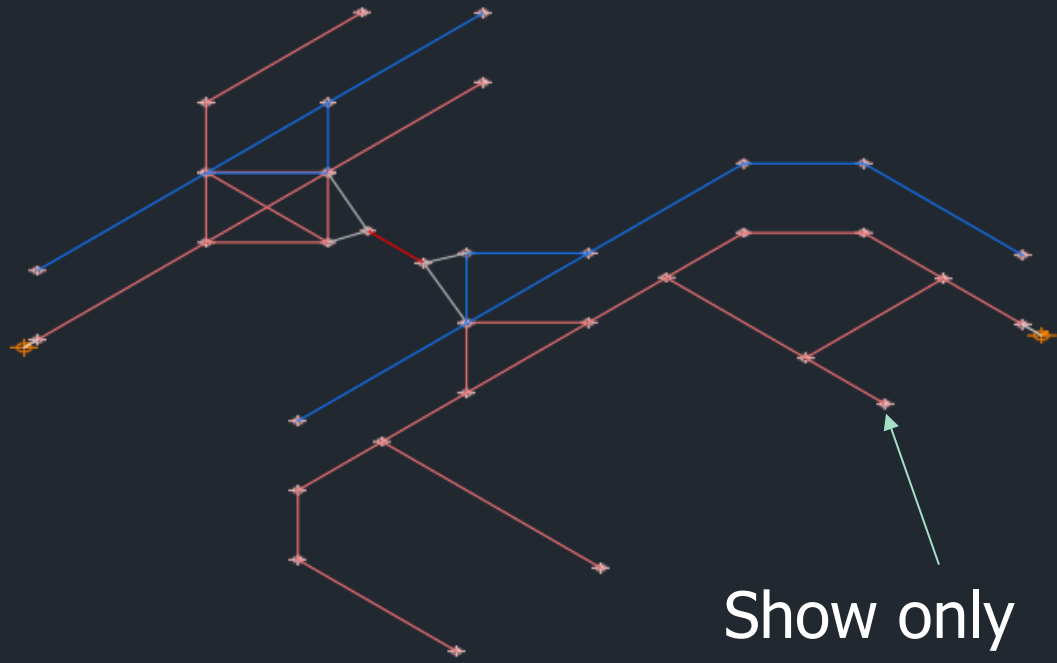
Current **Autoroute** Manual Rules Prefs

Length [m] 19.13

**Clear All**

Sequence	Seg ID	From node	To r
<input type="checkbox"/> 10	POWER-0015	N00582	N00
<input type="checkbox"/> 20	POWER-0014:0:3	N00581	N00
<input type="checkbox"/> 30	59466	N00583	N00
<input type="checkbox"/> 40	PEN-0026	N00603	N00
<input type="checkbox"/> 50	59459	N00586	N00
<input type="checkbox"/> 60	POWER-0019:1:2	N00580	N00
<input type="checkbox"/> 70	POWER-0002:2:0	N00599	N00
<input type="checkbox"/> 80	POWER-0006:2:0	N00612	N00
<input type="checkbox"/> 90	POWER-0007	N00613	N00
<input type="checkbox"/> 100	POWER-0005:2:1	N00614	N00

Connection  
Network  
Segment  
Route



Show only  
CMPIC objects

CMPIC R6.12.07 [ILD01,1]



[-][SW Isometric][2D Wireframe]

Segment details

ID PEN-0026

From node N00603

To node N00586

Length [m] 0.466

Raceway PEN-0026

Tier  1  2

Segregation P

Type PEN

Status

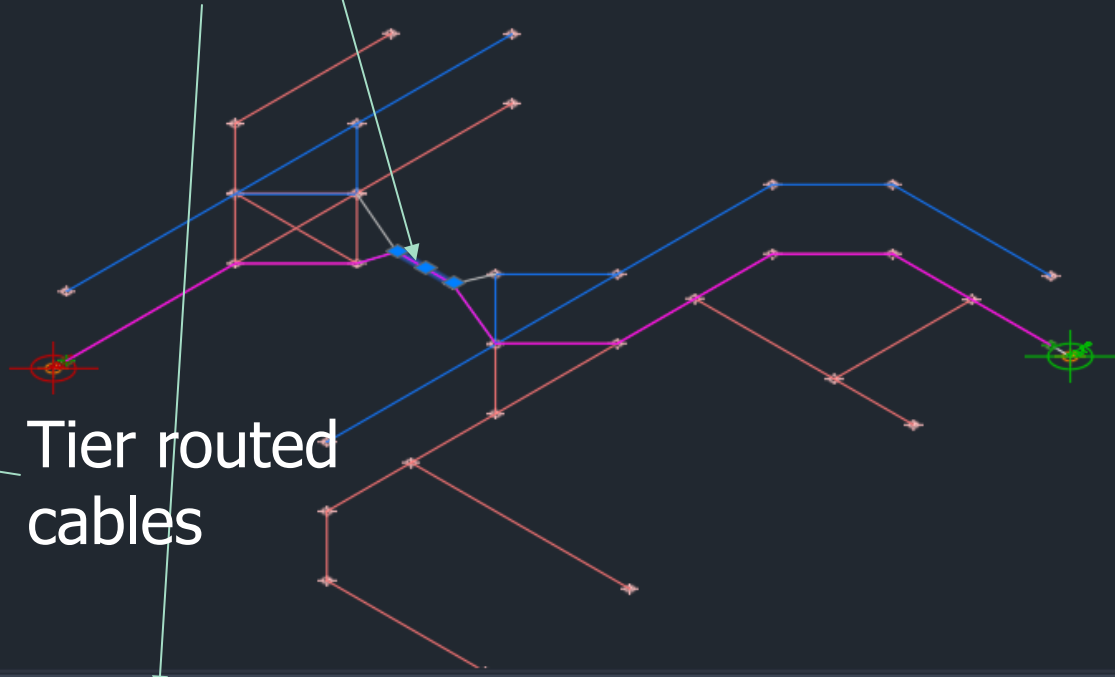
Vol Fill [%] .58/75 Wgt Fill [%] 0

Routed cables

Cable ID	From	To
<input type="checkbox"/> C1	MSB-0001@N00582	MSB-0002@N001

Multi-tier/frame penetration

Tier routed cables



Cables Segments

Segment ID	Tier	From	To	Raceway	Length [m]	Segregation	Type	MT Type	No tiers	Vol Fill	Wgt Fill	Z Fr
<input checked="" type="checkbox"/> PEN-0026	1	N00603	N00586	PEN-0026	0.466	P	PEN	PEN-2	2	0.58	0	-149
<input checked="" type="checkbox"/> PEN-0026	2	N00603	N00586	PEN-0026	0.466	C	PEN	PEN-2	2	0	0	150

CMPIC R6.12.07 [ILD01,1]



CMPIC