



ICSecurity

Industrial Cyber Security

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OT Layer 1,2 and 3 network Drawings
document version 0.1

Creating proper network drawings for your OT documentation needs, seems to be tricky for most people.

The trick is to avoid the common mistake of making a Hybrid(layer 1,2,3) drawing. Sure the hybrid drawings are great for brainstorming and for illustrating things at meetings. But for overall network documentation it is commonly accepted that having separate Layer 1, and layer 2 and Layer 3 drawings is the best way.

Making good drawings takes time.

There are a few tools around that will help you.

If you got the money, Microsoft VISIO is the one you want.

If you are on a shoestring budget take a look at DIA.

There are others around, even online ones, but you do not want your OT network drawings floating around in the open Cloud.

So make sure that you store them Encrypted.

Anyways lets get down to business

LAYER 3 Drawing

you start by creating the Layer 3 Drawing (Layer 3 as in OSI Layer 3) meaning anything that operates on the IP layer, like IP Subnets, Routers, Firewalls, Distributing/core switches(but only Layer 3 switches)

use either horizontal lines or vertical lines , don't mix them.

Group stuff that is sitting in the same security Zone (make a boxed area and put stuff there)

if the tool you use can handle it, then use layers

the base layer shows all the equipment

then add layers that shows routing, data-flows, VPN Tunnels etc..

you can then show (and print) the drawing with different layers of details which is very handy.

Layer 2 Drawing

The Layer 2 drawing shows VLAN's, TRUNK's, Switches, spanning tree information. You can add port cost information and stuff like that as well.

You can make the width of the Connection line show what type of speed (thick line =high speed , thin line =low speed and so forth)

use layers here as well to show the different types of information and to avoid clutter.

Layer 1 Drawing

This drawing shows the physical connections, the cables, the ports, has information of cable types, and port types, shows patch panels etc...

Links

some very good advise can be found in these articles:

<https://www.auvik.com/franklyit/blog/effective-network-diagrams/>

<https://trupel.com/networking/Lists/Billets/Post.aspx?ID=7>

Tools

Microsoft Visio

<https://www.microsoft.com/en/microsoft-365/visio/flowchart-software>

Dia

<https://sourceforge.net/projects/dia-installer/>