UFPR
UNIVERSIDADE FEDERAL DO PARANÁ

OPENDSS

Open Distribution System Simulator

INTRODUÇÃO

1. **Software livre desenvolvido em 1997 pela EPRI (*Electric Power Research Institute*)**

2. **Ferramenta de modelagem e simulação:**

   redes, circuitos de distribuição e seus componentes

3. **Propósito original: interconexão de GDs**

Fonte: OpenDSS Training Workshop (2011)

INTRODUÇÃO

Características:

- **Fluxo de potência harmônico**
- **Análises em regime**
- **Soluções fasorais**
  - **(não resolve transientes eletromagnéticos)**
- **Resolve redes radiais e malhadas**

Fonte: OpenDSS Training Workshop (2011)

INTRODUÇÃO

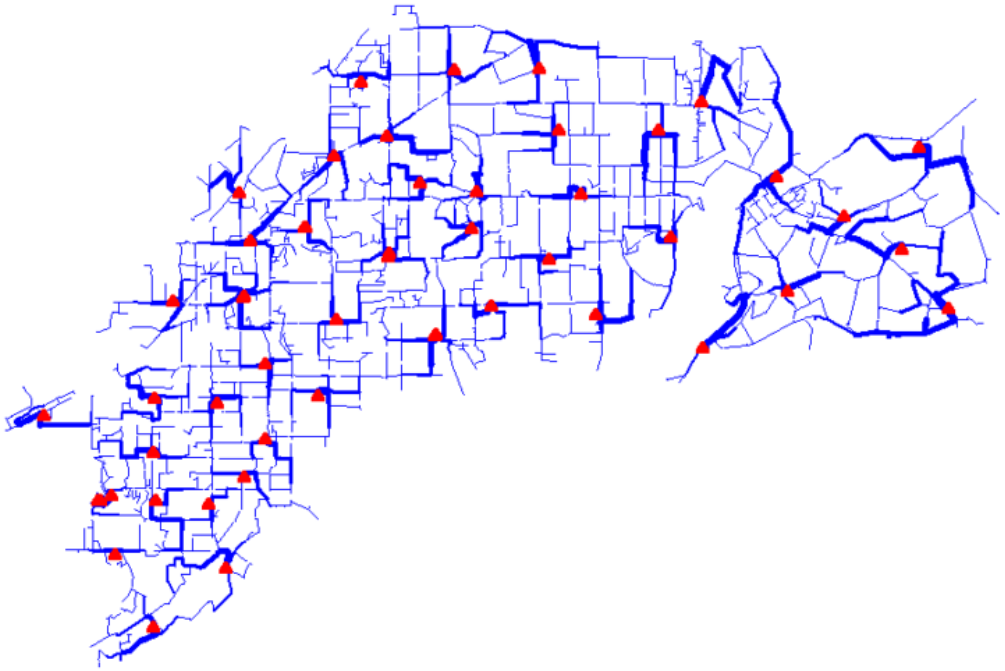
Modos de solução

- **Snapshot**
- **Diária**
- **Anual**
- **Estudos de curto circuito**
- **Harmônicos**

Fonte: OpenDSS Training Workshop (2011)

INTRODUÇÃO

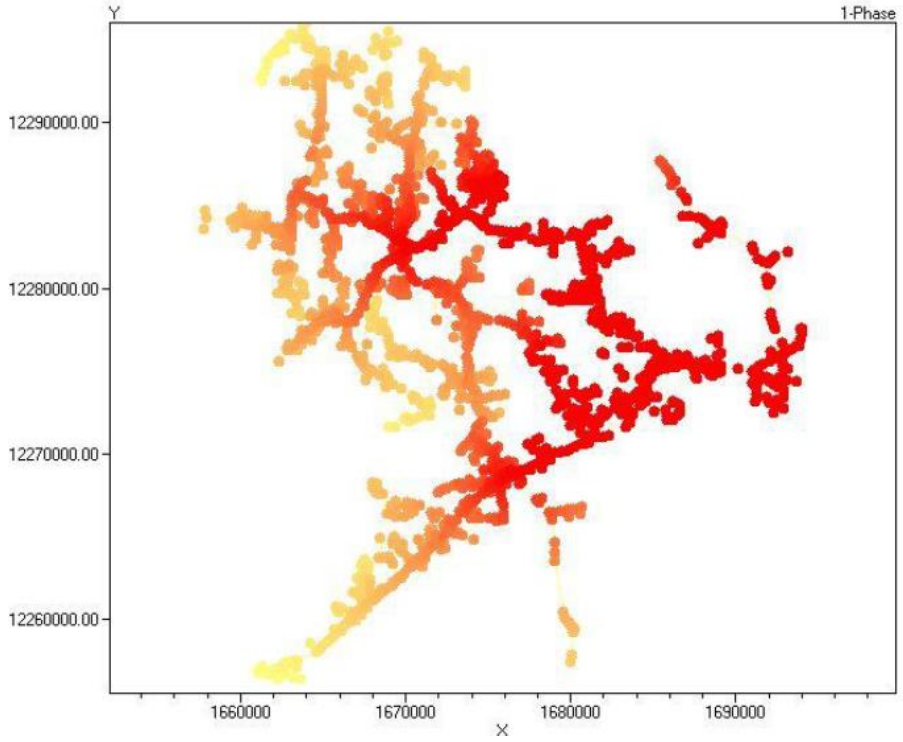
Visualização do fluxo de potência



Fonte: OpenDSS Training Workshop (2011)

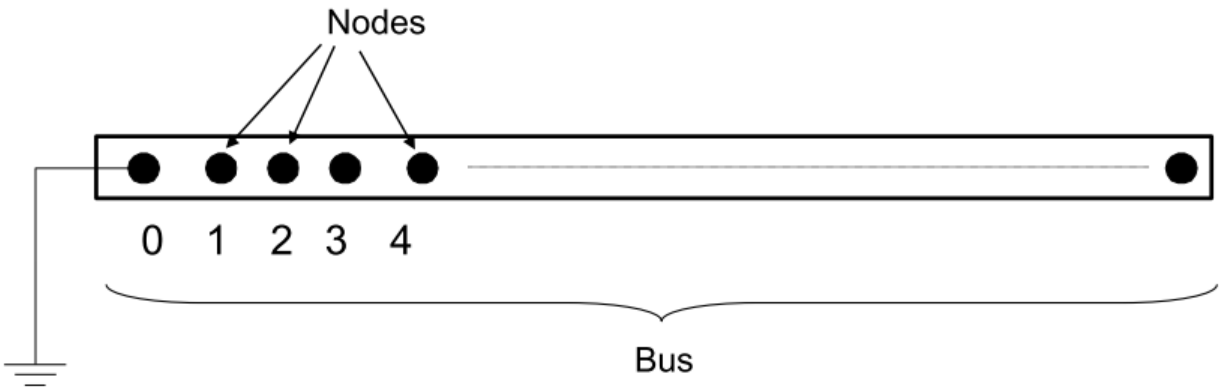
INTRODUÇÃO

Magnitudes de correntes de curto circuito:



Fonte: OpenDSS Training Workshop (2011)

MODELAGEM



Referring to Buses and Nodes (A Bus has 1 or more Nodes)

Bus1=*BusName.1.2.3.0*

(This is the default for a 3-phase circuit element)

Shorthand notation for taking the default

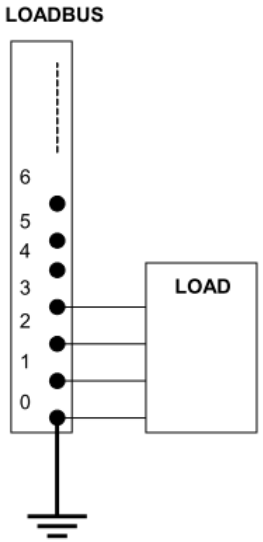
Bus1=*BusName*

Note: Sometimes this can bite you (e.g. – Transformers, or capacitors with ungrounded neutrals)

Fonte: OpenDSS Training Workshop (2011)

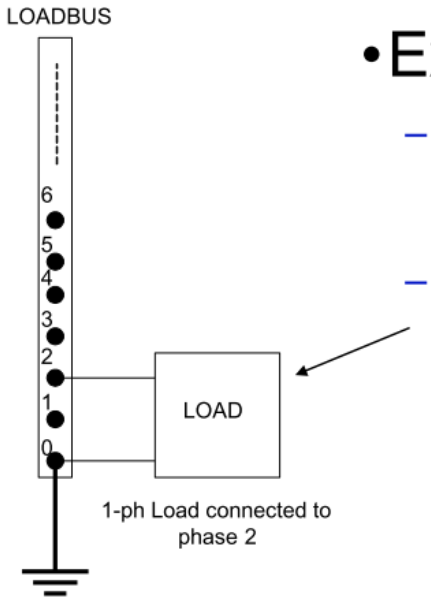
MODELAGEM

- Shorthand (implicit)
  - **New Load.LOAD1 Bus1=LOADBUS**
    - Assumes standard 3-phase connection by default



Fonte: OpenDSS Training Workshop (2011)

MODELAGEM



1-Phase Load Example

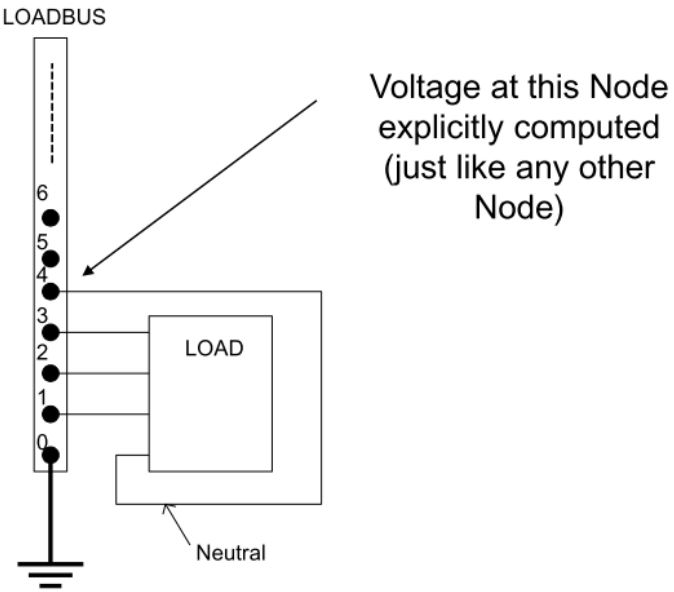
- Explicit
  - **New Load.LOAD1 Bus1=LOADBUS.1.2.3.0**
    - Explicitly defines which node
  - **New Load.1-PHASELOAD Phases=1 Bus1=LOADBUS.2.0**
    - Connects 1-phase load to Node 2 and ground

Fonte: OpenDSS Training Workshop (2011)

MODELAGEM

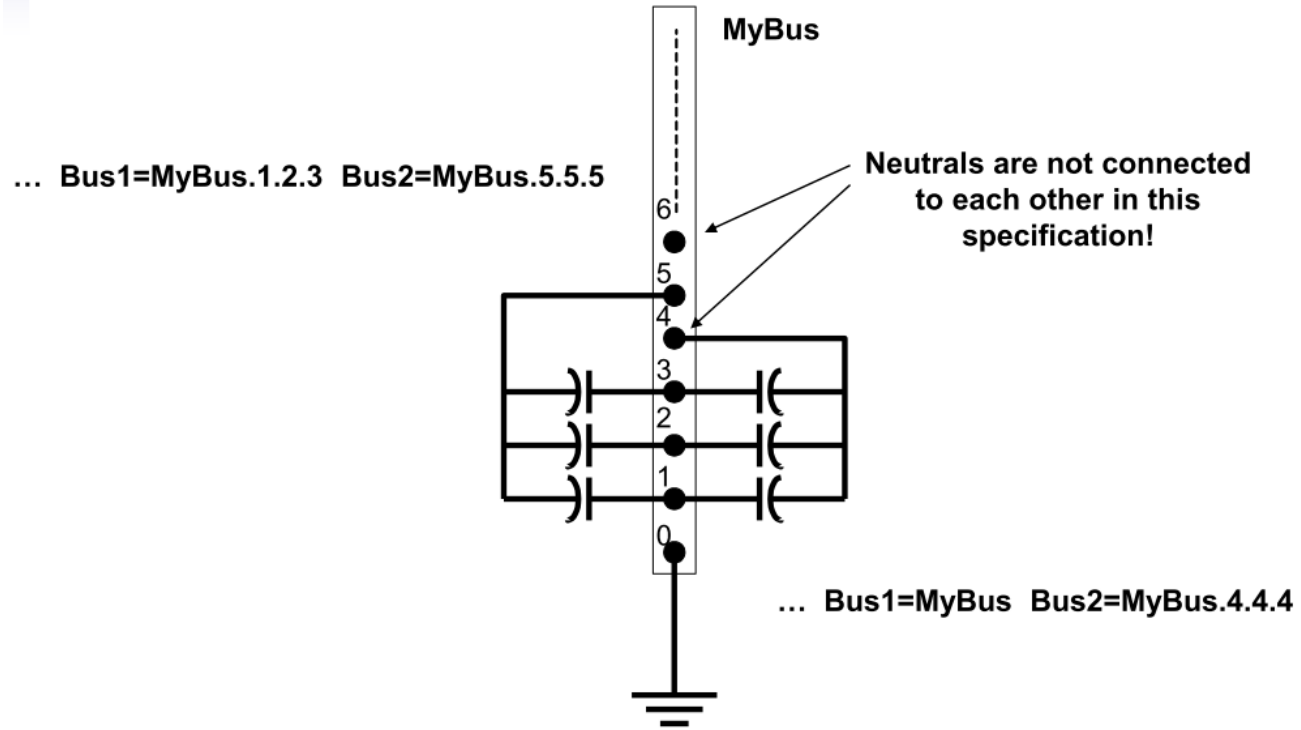
Ungrounded-Wye Specification

– **Bus1=LOADBUS.1.2.3.4** (or some other unused Node number)



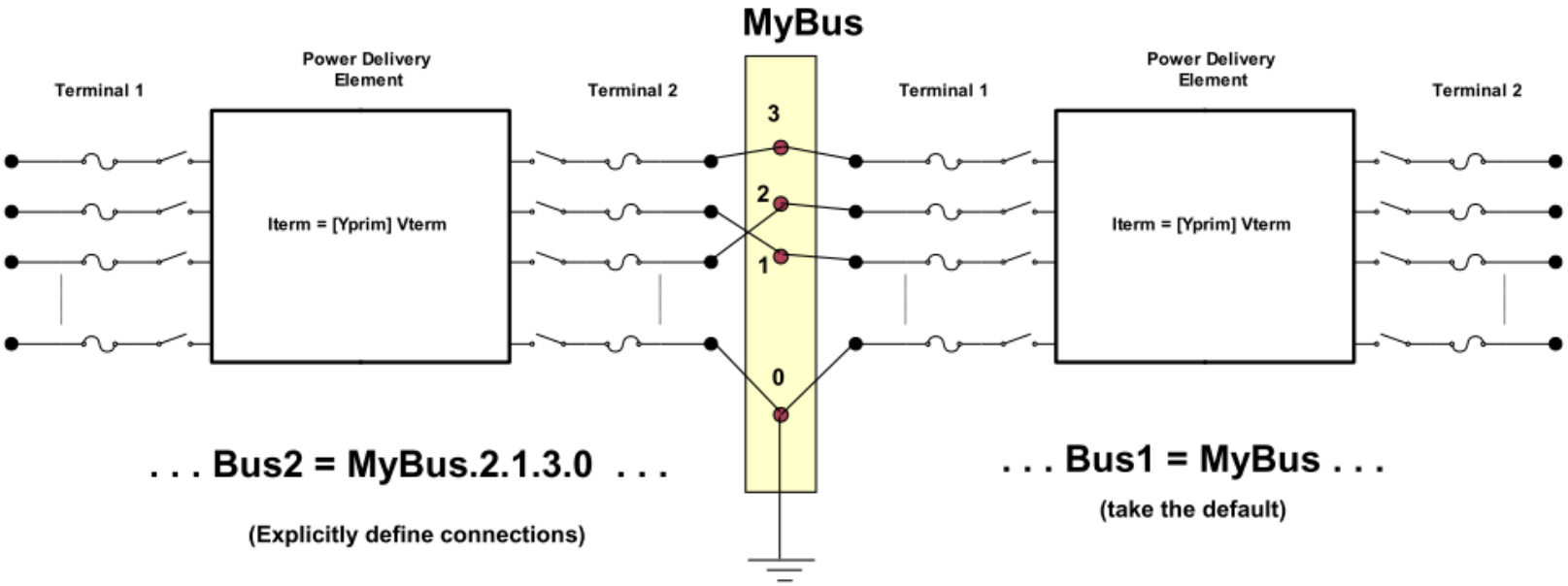
Fonte: OpenDSS Training Workshop (2011)

MODELAGEM



Fonte: OpenDSS Training Workshop (2011)

MODELAGEM

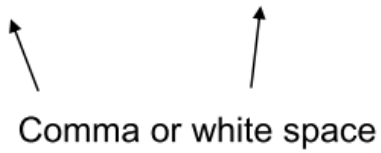


Fonte: OpenDSS Training Workshop (2011)

COMANDOS

- *Command parm1, parm2 parm3 parm 4 ….*

- Parameters may be positional or named (tagged).
- If named, an "**=**" sign is expected.
  - ***Name=value*** *(this is the named form)*
  - ***Value*** *(value alone in positional form)*
- *For example, the following two commands are equivalent:*
  - `New Object="Line.First Line" Bus1=b1240 Bus2=32 LineCode=336ACSR, …`
  - `New "Line.First Line", b1240 32 336ACSR, …`



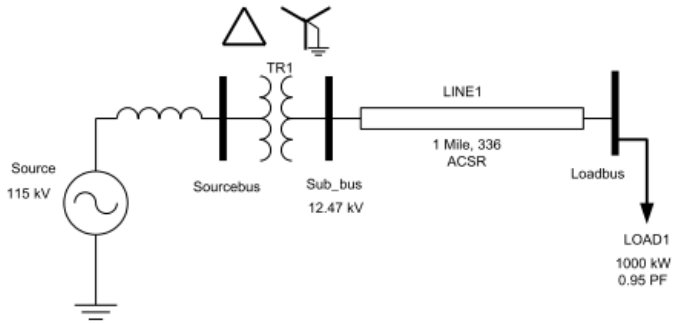
INSTALAÇÃO

Criar pasta no Disco Local

Executar instalador

Instalar na pasta do disco local

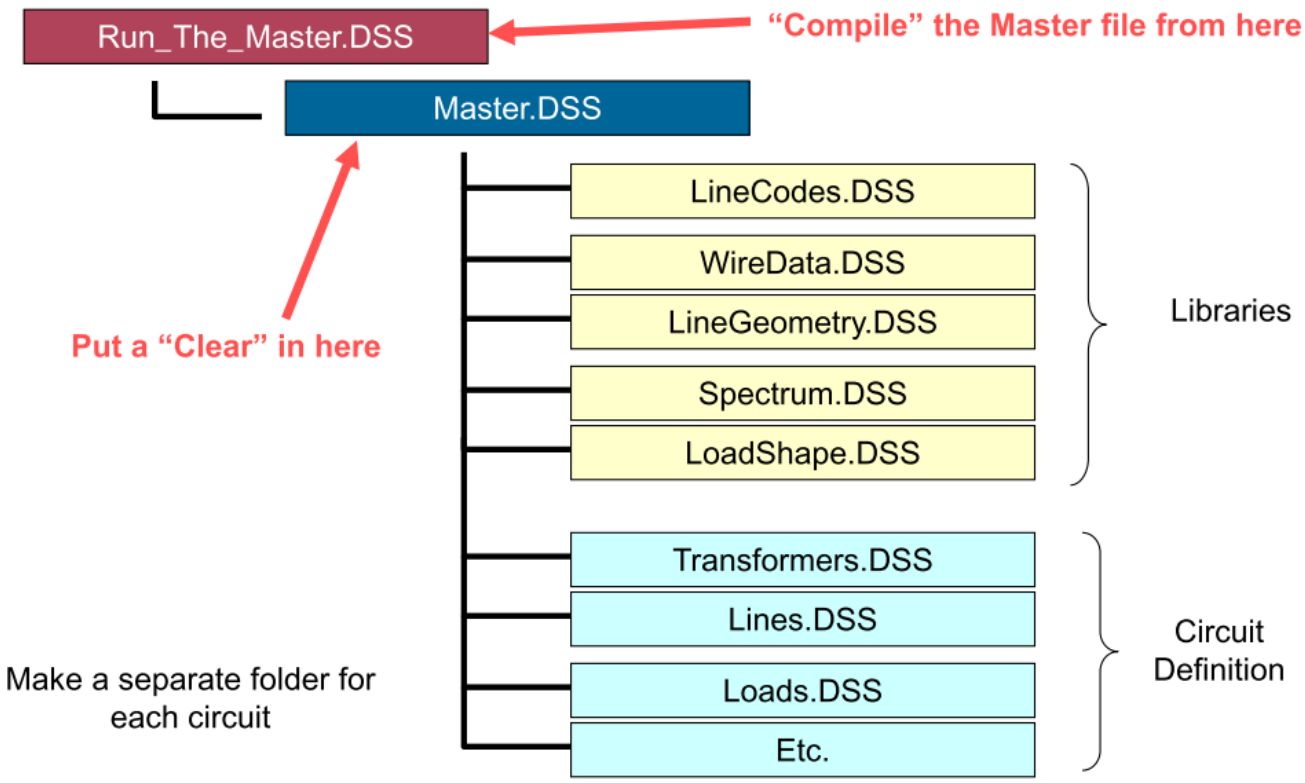
EXEMPLO




```
New Circuit.Simple     ! Creates voltage source  (Vsource.Source)
Edit Vsource.Source BasekV=115 pu=1.05  ISC3=3000  ISC1=2500  !Define source V and Z
New Transformer.TR1 Buses=[SourceBus, Sub_Bus] Conns=[Delta Wye] kVs= [115 12.47]
~ kVAs=[20000 20000] XHL=10
New Linecode.336ACSR R1=0.058 X1=.1206 R0=.1784 X0=.4047 C1=3.4 C0=1.6 Units=kft
New Line.LINE1 Bus1=Sub_Bus Bus2=LoadBus Linecode=336ACSR Length=1 Units=Mi
New Load.LOAD1 Bus1=LoadBus kV=12.47 kW=1000 PF=.95
Solve
Show Voltages
Show Currents
Show Powers kVA elements
```

Fonte: OpenDSS Training Workshop (2011)

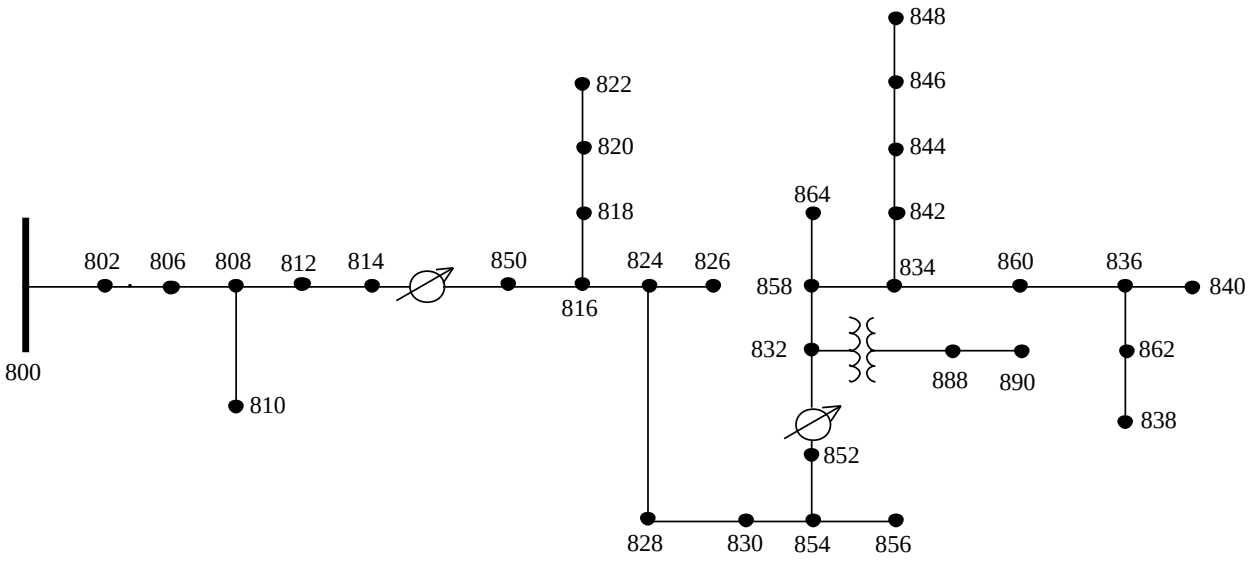
ORGANIZANDO SCRIPTS



Fonte: OpenDSS Training Workshop (2011)

EXEMPLO

IEEE 34 Bus System



Fonte: IEEE PES Test Feeders

FONTES ADICIONAIS

Documentos e mais detalhes:

http://electricdss.svn.sourceforge.net/viewvc/electricdss/Doc/

Página principal:

sourceforge.net/apps/mediawiki/electricdss/index.php?title=Main_Page

TRABALHO

Altere a carga do sistema IEEE 34 de barras para 40% da nominal e avalie os tapes e as magnitudes de corrente nos reguladores de tensão. Na sequência aumente a carga para 110% da nominal e faça as mesmas avaliações, comparando com o cenário anterior.

Com o sistema em carga nominal, retire os reguladores de tensão do sistema IEEE de 34 barras (ieee34Mod1.dss) e avalie os perfis de tensão comparando o antes e o depois.