vocality
Efficient Networks

Configuring Simulator 3 for Serial

Application Note AN406
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AN406 Configuring Simulator 3 for Serial

1   Overview

This Application Note is designed to help a user who has no experience with the Sim 3 get the unit up and running and passing traffic, so that they can start testing immediately. The Sim 3 allows you to simulate delay, errors, jitter, and other variables that you would encounter in a satellite network. For a more complete explanation of all the options available please refer to your Sim 3 User Manual.

2   Equipment

Sim 3 is the only hardware needed. No special software is required.

3   Configuration

```
                            SIM3 Supervisor
P1    TxC:  64000 RxC:  64000  Simulation: SERIAL  P2    TxC:  64000 RxC:  64000
-----------------------------[ MAIN MENU ]-----------------------------

                         SYSTEM
                         CONFIGURATIONS
                         SERIAL PORTS
                         SERIAL STREAMS
                         SERIAL ERROR PROFILES
                         SERIAL SCRIPTS
                         SERIAL ADVANCED SETTINGS
                         SERIAL CONTROLS
                         SERIAL STATUS
                         IP
                         FEATURE KEYS
                         DIAGNOSTICS



                    -----Configuration #1 is active-----------------------
<CR> to select item
```

Figure 1 Sim 3 Main menu

The default settings on a Sim 3 are shown at the top of the Main menu. As you can see here each serial port is setup to run at 64k by default. To configure the serial ports move the cursor to SERIAL PORTS and press **<Enter>**.

```
                          SIM3 Supervisor
P1    TxC:  64000 RxC:  64000  Simulation: SERIAL  P2    TxC:  64000 RxC:  64000
----------------------------[ SERIAL PORTS #1 ]----------------------------

                       Transmit                 DTE TxC DTE RxC Driving Sample
Port    Interface Type Clock     Loopback       Invert  Invert  Edge    Edge
1       RS449     DCE  TxC       NONE           Off     Off     FALL    FALL
2       RS449     DCE  TxC       NONE           Off     Off     FALL    FALL











------------------------Configuration #1 is active------------------------
Use <SPACE>/+ or - to select
```

Figure 2 Sim 3 Serial Ports menu

This menu shows both serial ports and their configuration. You can change the interfaces by highlighting the parameter you want to modify and pressing the **<Spacebar>** to move between the different settings.

The parameters and options which can be set are:

Parameter	Options	Use
Interface	RS449, RS422, RS232, V11, V35	Various interfaces can be simulated
Type	DTE, DCE	The Sim 3 can function as either DTE or DCE, with the pinouts changing along with the setting.
Transmit Clock	TxC [for DCE and DTE], TT [for DTE only]	Determines which transmit clock is used..
Loopback	NONE, LOOP, ECHO	LOOP will provide a loop back to the local equipment using the Sim 3's settings. ECHO will provide an external loopback applied at the hardware level. Data received will be sent back out without entering the Sim 3.
DTE TxC Invert	On or Off	On inverts the DTE transmit clock.
DTE RxC Invert	On or Off	On inverts the DTE receive clock.
Driving Edge	FALL or RISE	When set to FALL it drives out serial data on the falling edges of the clock. When set to RISE it drives out serial data on the rising edge of the clock.
Sample Edge	FALL or RISE	When set to FALL incoming serial data is sampled on the falling clock edges. When set to RISE the incoming serial data is sampled on the rising clock edges.

Table 1 Parameters in the Sim 3 Serial Ports menu

```
                          SIM3 Supervisor
P1    TxC:  64000 RxC:  64000  Simulation: SERIAL  P2    TxC:  64000 RxC:  64000
----------------------------[ SERIAL STREAMS #1 ]----------------------------


Clock Mode:           MASTER

Port 1:
   Data Source:       2
   Data Speed:        64000
   Error Regime:      NONE
   Delay(ms):         300

Port 2:
   Data Source:       1
   Data Speed:        64000
   Error Regime:      NONE
   Delay(ms):         300




--------------------------Configuration #1 is active------------------------
Use <SPACE>/+ or - to select
```

Figure 3 Sim 3 Serial Streams menu

The next step is to modify the serial streams as you want them.

The parameters and options which can be set are:

Parameter	Options	Use
Clock Mode	MASTER or DERIVED	Set to MASTER the Sim 3 will provide clock out for each port. If it is set to DERIVED, then the unit derives clock from the external units connected to it and onward links it to the corresponding port.
Data Source	1, 2, or NONE	If set to NONE, then no data is transmitted. If a port is set to itself as its data source, then it will be looped. The port 1 should be set to port 2 and port 2 should be set to port 1 in normal configuration.
Data Speed	1200 to 5120000	
Error Regime	NONE, Error Profile 1-8	Select the error regime you want running on that port.
Delay (ms)		The amount of delay you want to apply to that port.

Table 2 Parameters in the Sim 3 Serial Streams menu

```
                          SIM3 Supervisor
P1    TxC:  64000 RxC:  64000  Simulation: SERIAL  P2    TxC:  64000 RxC:  64000
-------------------------[ SERIAL ERROR PROFILES #1 ]-------------------------

Error Profile 1:
   Error Mode:     RANDOM        Error Rate:   1x10-6
   Burst:          CONSTANT      Length(ms):   60000
   Gap:            CONSTANT      Length(ms):   60000
Error Profile 2:
   Error Mode:     NONE
   Burst:          CONSTANT      Length(ms):   60000
   Gap:            CONSTANT      Length(ms):   60000
Error Profile 3:
   Error Mode:     NONE
   Burst:          CONSTANT      Length(ms):   60000
   Gap:            CONSTANT      Length(ms):   60000
Error Profile 4:
   Error Mode:     NONE
   Burst:          CONSTANT      Length(ms):   60000
   Gap:            CONSTANT      Length(ms):   60000

                <NEXT PAGE>
--------------------------Configuration #1 is active------------------------
Use <SPACE>/+ or - to select
```

Figure 4 Sim 3 Serial Error Profiles menu

There are 8 separate Error Profiles that you can configure.

The parameters and options which can be set are:

Parameter	Options	Use
Error Mode	RANDOM, CONSTANT, GAUSSIAN, NONE	Select the type of errors.
Error Rate	1×10^n, where n is -12 to 0	The error rate.
Burst	CONTINUOUS, CONSTANT, GAUSSIAN, NONE	Determines the length of the burst. - Continuous is continuous errors with no gap. - Constant is where the bursts and gaps are a constant duration. - Random is where the errors are configured with a min and max value followed by a regular distribution. - Gaussian is where the gaps are of random duration followed by a Gaussian distribution.
Gap	CONSTANT, RANDOM, GAUSSIAN	The gap in errors in between the bursts. - Constant is where the gaps are a constant duration. The length of the gap is selected. - Random is where the burst are configured with a min and max value followed by a regular distribution. - Gaussian is where the bursts are of random duration followed by a Gaussian distribution.
Length		Duration of burst or gap in ms.

Table 3 Parameters in the Sim 3 Error Profiles menu

```
                              SIM3 Supervisor
P1    TxC:  64000 RxC:  64000  Simulation: SERIAL  P2   TxC:  64000 RxC:  64000
-----------------------------[ SERIAL CONTROLS #1 ]----------------------------

 Ports   Data   Delay Error    Script   Single Error         ----Clocks----
Dest Src Speed  (ms)  Mode     Row Step Error  Burst    Data  RxC  TxC   TT
1    2   64000  300   NONE      -   -   <INS>           <KIL> <KIL> <KIL> <KIL>
2    1   64000  300   NONE      -   -   <INS>           <KIL> <KIL> <KIL> <KIL>










<REFRESH DISPLAY>        <RESTART SIMUL>   <ZERO STATS>  <RESTART AND ZERO STATS>

-------------------------Configuration #1 is active---------------------------
Use <SPACE>/+ or - to select
```

Figure 5 Sim 3 Serial Controls menu

The Serial Controls menu displays the current status and offers some manual control over the simulation.

The parameters which can be set are:

Parameter	Options	Use
Data Speed		Actual clock speed associated with this port.
Delay (ms)		Shows the delay for that port.
Error Mode	NONE, a profile, or a script	Shows how the stream is configured in the Serial Streams menu.
Script Row		When a script is selected it shows the current row.
Script Step		When a script is running selecting this causes the script to be moved to the next row.

Table 4 Parameters in the Sim 3 Serial Controls menu

4   About Application Notes

Application Notes are intended as a supplement to, rather than a substitute for, your User Manual. Should you have queries which are not answered by our current documentation, your local Vocality support team would be happy to hear from you.
E-mail **support@vocality.com**.