



Availability Advanced

Wednesday, October 18, 2017

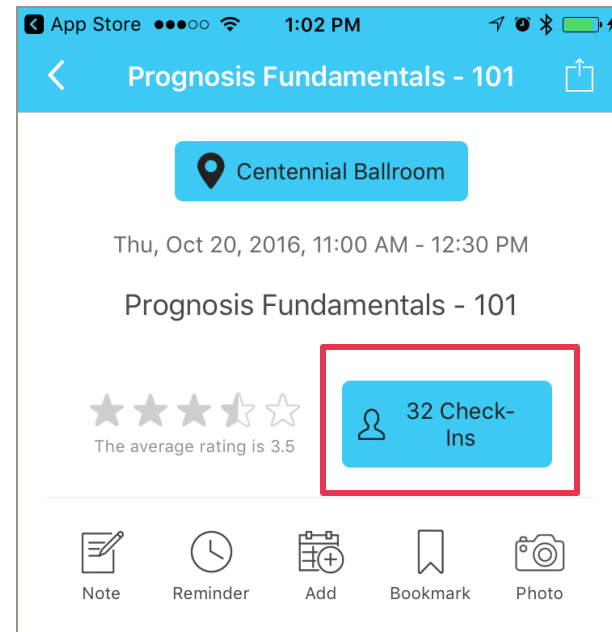
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Welcome!

Please check-in on the mobile app - see your class record, remember what tests to take, and help us improve





- **WiFi SSID:** IR Prognosis Summit
- **WiFi PW:** Summit17
- Download the Slides from
Online.Prognosis.com(insert URL)
- Login to the Demo Instance (insert URL)



Where to find the Exercises?

- Open up Prognosis Client (GUI) application
- Login in with credentials:
- Username: **SummitUser** Password: **Summit2017**
- Add a shortcut on the Prognosis Document Navigator pointing to:

***D:\IR Summit 2017 - Lab Content\Lab Availability
- Advanced***



Agenda

- What is Prognosis Availability?
- What terms are used in Availability?
- Planning your Availability Configuration
- Working with Availability Configuration
- How to write and add schedules



Agenda

- Building Availability through Thresholds
- How to add Sub-entities to an Application
- Useful Displays
- Review questions



Learning Objectives

- After completing this course you should:
 - Be able to define availability as the monitoring of the current state of a defined entity
 - Understand Availability Entities are a collection of automatic and user-defined systems components.
 - Be able to set up DISK, PORT, PROCESS, SERVICE, TCPIP, APPLICATIONS, THRESHOLDS



What is Prognosis Availability?

- PROGNOSIS Availability enables PROGNOSIS to monitor applications and their underlying components
- PROGNOSIS Availability instantly identifies when any one of the components changes status; be it a performance threshold, start, stop, up, down, etc.



What is Prognosis Availability?

- PROGNOSIS Availability provides a consolidated solution to monitor complex, multi-platform and multi-component environments
- PROGNOSIS Availability provides the foundation for monitoring and reporting on user-defined service levels.



Standard Availability Entities

Windows:

- TCPIP Local Host (local server)
- All 'automatic' services detected during installation
- All disks detected during installation
- PROGNOSIS port, process, service
- PROGNOSIS application



Standard Availability Entities

– UNIX

- TCPIP local host (local server)
- All servers listed in the /etc/hosts file
- PROGNOSIS 'inetrr' process
- PROGNOSIS application



Standard Availability Entities

– NonStop

- TCPIP local host (local server)
- All CPU, inter processor buses, Disk, tape and comm lines
- PROGNOSIS application



Planning your Availability Configuration

1. What are my critical applications and their components?
2. Do I want to consider performance as part of availability?
3. What node(s) is going to be used to monitor and track my top level availability entities (applications)?



Planning your Availability Configuration

4. Will I need to track service levels and their associated schedules?
5. What method will I use to monitor my application entities (consolidated or distributed across nodes)?



Working with Availability Configuration

- The AVAILABILITY configuration defines the PROGNOSIS availability entities that are targeted for monitoring.
- The configuration defines the application(s) and their underlying components



Working with Availability Configuration

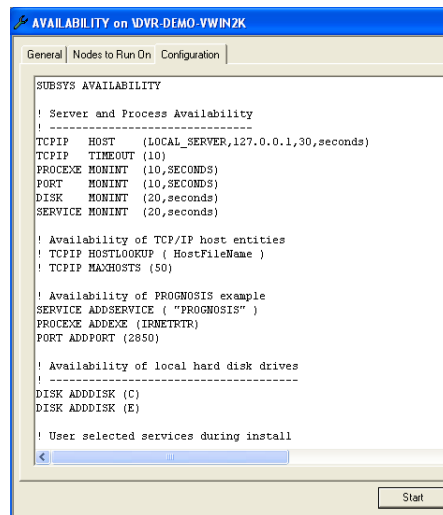
- Text format configuration document
- The name of the availability configuration is *AVAILABILITY*
- NonStop also utilizes an UPDOWN configuration for entity definition



Working with Availability Configuration

AVAILABILITY documents define:

- Node to Run on
- Configuration: TCPIP
PROCEXE
PORT
DISK
SERVICE
THRESHOLD
APPLICATION





Working with Availability Configuration

- Performance based (thresholds)
- Combination of multiple entities (application)
- Includes: THRESHOLD & APPLICATION
- NOTE: entities must be defined before being added to an APPLICATION

```
AVAILABILITY on VDR-DEMO-VWINZK
General | Nodes to Run On | Configuration
-----
SUBSYS AVAILABILITY
! Server and Process Availability
! -----
TCP/IP HOST (LOCAL_SERVER,127.0.0.1,30,seconds)
TCP/IP TIMEOUT (10)
PROCE MONINT (10,SECONDS)
PORT MONINT (10,SECONDS)
DISK MONINT (20,seconds)
SERVICE MONINT (20,seconds)

! Availability of TCP/IP host entities
! TCP/IP HOSTLOOKUP ( HostFileName )
! TCP/IP MAXHOSTS (50)

! Availability of PROGNOSIS example
SERVICE ADDSERVICE ( "PROGNOSIS" )
PROCE ADDRCE (18METR)
PORT ADDRPORT (2850)

! Availability of local hard disk drives
! -----
DISK ADDRDISK (C)
DISK ADDRDISK (E)

! User selected services during install
<-----
Start
```



Availability Configuration Exercise 1

Task: Monitor a process on Windows with Prognosis:

1. Open up Prognosis Client
2. Open up the Configuration > Availability on the node navigator
3. Enter a process to be monitored: NOTEPAD.EXE
PROCEXE ADDEXE (NOTEPAD)
4. Click Start



Availability Configuration Exercise 1

Task: Monitor a process on Windows with Prognosis:

4. Open Knowledge>Windows Server Central on the Document Navigator.
5. On the Prognosis 'Windows Server Overview' display, Click on 'Availability' link.
6. On the 'Availability Central' Display, click on the 'PROCESS' link

NOTE: *Keep these displays open throughout this lab session*



Availability Configuration Exercise 1

- You will see the 'NOTEPAD' process down if Notepad.exe is not running:

The screenshot shows the 'Availability Central' interface. At the top, it says 'Availability Central' and 'VPSE-JITESH'. Below this, there are two main sections: 'Summary' and 'PROCESS Entities'.

Summary

Type	Cnt
APPLICATION	1
DISK	1/1
PORT	1/1
PROCESS	1/2
SERVICE	17 / 17
TCP/IP	1/1
THRESHOLD	93 / 93

PROCESS Entities

Status	Name	Duration	Last Fail
Down	NOTEPAD	13	6/2/2017 09:54:40
Up	IRNETRTR		5/27/2017 07:05:55

- Open up NotePad.exe on Windows and you will see the process in this display change status to 'Up'



Availability Configuration Exercise 1

Click on the Process 'NOTEPAD':

Availability Details

Availability Details for Entity

VPSE-JITESH NOTEPAD

Summary		Availability	
Name :	NOTEPAD	Availability Now :	100.00 %
Type :	PROCESS	Target :	
Sub Type :		Availability This Hour (State Changes) :	10.226628 % (3)
Sub ID 1 :		Availability Last Hour (State Changes) :	0.000000 % (0)
Sub ID 2 :		Availability Today (State Changes) :	1.004731 % (3)
Monitored From :	VPSE-JITESH	Availability Yesterday (State Changes) :	0.000000 % (0)
Instances :	1	Failures for Interval :	0
Status :	UP	Failures Total :	2
Status Details :	UP	Last Failure :	6/2/2017 09:54:40
Reponse Time :		Mean Time Between Failures :	6:44
		Total Time Between Failures :	
		Last State Change :	6/2/2017 09:56:45

Service Level Target	
Schedule Name :	
Schedule Target :	
Outage Required :	DET
Service Type :	Normal
Next Outage Start :	
Next Outage End :	

Threshold Details	
Threshold Name :	
Condition Name :	
Priority :	
Running On :	

Recent Outages				
Down	Up	Duration	Service	Reason
2017/6/2 09:54:40	2017/6/2 09:56:45	2:05		DOWN



Availability Configuration - APPLICATIONS

- It is possible to group Availability monitored components into an entity or 'Applications'. E.g. I might want to group a particular PORT, PROCESS, SERVICE etc that Prognosis uses in an APPLICATION called '**MyPrognosis**' or '**MyWindows**' etc
- The Application can be named anything but it would make sense to call it something relevant to what is monitored as a group.



APPLICATIONS Exercise 2

Task: Add Processes, ports to an Application called: Windows

1. Open up the Configuration > Availability on the node navigator
2. Add more processes/ports to be monitored:
 - PROCESSE ADDEXE (SNIPPINGTOOL)
 - PORT ADDPORT (135)
3. Make sure you have Notepad and the snipping tool open



APPLICATIONS Exercise 2

Task: Add Processes, ports to an Application called: Windows

3. Group the above two entities as well as the Notepad entity into an Application called Windows:
 - APPLICATION ADDEXE ("Windows", NOTEPAD,1)
 - APPLICATION ADDEXE ("Windows", SNIPPINGTOOL,1)
 - APPLICATION ADDPORT ("Windows", 135,ACTIVE,1)
4. Click Start



APPLICATIONS Exercise 2

Task: Add Processes, ports to an Application called: Windows

5. On the 'Availability' display, click on the Arrow next to APPLICATION on the display -

Type	Cnt
APPLICATION	1
PORT	1 / 1
PROCESS	2 / 2
THRESHOLD	303 / 405

Status	Name	View	Service	Target	Duration	Last Fail
UP (100.00 %)	Windows	View	Config			10/12/2017 10:36:22



APPLICATIONS Exercise 2

- Click on the 'Windows' Application:

Applications - All						
Status	Name	View	Service	Target	Duration	Last Fail
UP (100.00 %)	Windows	Comp				10/12/2017 10:36:22

- Note the various components within the 'Windows' Application:

Components of Windows Application				
Status	Component ID	Detail	Duration	Last Fail
Up	NOTEPAD			10/12/2017 10:31:36
Up	SNIPPINGTOOL			10/12/2017 10:34:51
Up	135 (PORT)			

- What happens when you switch off one of the Processes?
- Why does the 'Windows' Application not show degraded?



Availability -Weighting

- In order to effectively manage an application, each component (or application) is configured to accurately reflect its impact on an application's availability. Components will have different weightings to reflect their role in the application.
- Some entities will be critical, with their failure causing an application outage, whilst other entities may form part of a resource pool where a certain amount of redundancy is factored in.



Availability -Weighting

Each APPLICATION statement in the Availability Configuration can be weighted to determine when an application will be reported as being DOWN. This is done by using the following options: **[,CR | nn | DE]**



Availability -Weighting

CR - Critical component - If a physical entity is flagged as critical, then the UP/DOWN status of the logical application that it belongs to will be the same. That is, if the physical entity is DOWN then so is the logical application. This is the default setting for all components.

If one or more subcomponents go down, the main Application goes down.



Availability -Weighting

nn - Weighting Percentage - A weighting allocated to this physical entity, representing the proportion it makes up of its logical entity's (an application's) availability status.



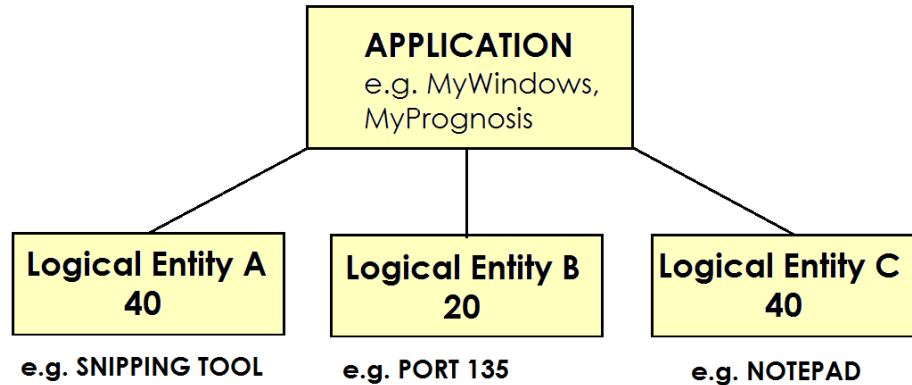
Availability -Weighting

SUBSYS AVAILABILITY

APPLICATION ADDEXE (MyWindows,A, 40)

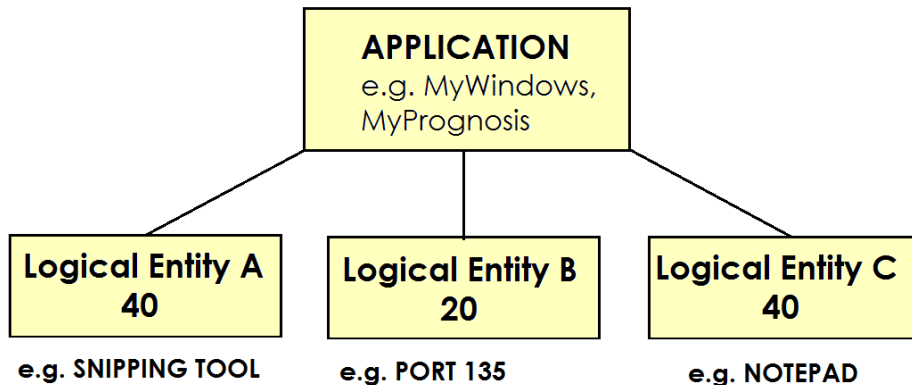
APPLICATION ADDPORT (MyWindows,B, 20)

APPLICATION ADDEXE (MyWindows,C, 40)





Availability -Weighting



If Logical Entity A or C went down, it would have more of an impact on the overall availability of the APPLICATION compared to Logical Entity B.



Availability -Weighting

DE - Distribute evenly- If the sum of its sibling entities percentages is less than 100%, then the other siblings with DE options split the remaining percentage equally between themselves.

Equal weighting across all subcomponents

Lets add 'DE' to exercise 2 to see what happens...



Weighting Exercise 3

Task: Make sure all entities under 'Windows' is distributed evenly

1. Open up the Configuration > Availability on the node navigator

2. Add 'DE' to the three entities:

APPLICATION ADDEXE ("Windows", NOTEPAD,1, DE)

APPLICATION ADDEXE ("Windows", SNIPPINGTOOL,1, DE)

APPLICATION ADDPORT ("Windows", 135,ACTIVE,1, DE)

3. Click Start



Weighting Exercise 3

4. Make sure you have Notepad and Snipping Tool open
5. On the 'Availability Central' You should see 100% Up next to the 'Windows' Application.
6. Switch off one of the processes (either Notepad or Snipping Tool)
7. Does the 'Windows' Application show status down like it did on Exercise 2?



Service Levels

To add service levels to AVAILABILITY, the following are required:

- Setup a SCHEDULE configuration
- Attach a schedule to an entity (SCHEDULE entity)
- Set Service Level targets for each entity (TARGET entity)



Set up a Schedule Configuration

The SCHEDULE configuration defines the periods when the entity is to be monitored



Set up a Schedule Configuration

The following syntax shows some option available in the SCHEDULE Configuration.

```
SCHEDULE ADDSCHED (SCHED1, ONCE, 15 JUL 2017, 09:00-17:00)
```

```
SCHEDULE ADDSCHED (IRSCCHEDULE, WEEKLY, MON-SUN, 08:00-21:00 )
```

```
SCHEDULE ADDSCHED (SCHED1, WEEKLY, MON or MON-FRI or MON | WED | THUR, 09:00-17:00)
```

```
GLOBAL EXCEPTION (24NOV2017, 23:00-01:00)
```



Attach a Schedule to an Entity

SCHEDULE entity assigns previously defined schedules to **AVAILABILITY** entities.

Schedule Configuration:

SCHEDULE ADDSCHED (**SCHED1**, ONCE, 15 JUL 2008, 09:00-17:00)

Availability Configuration:

APPLICATION SCHEDULE (MyWindows, **SCHED1**)



Service Levels Exercise 4

Task: Set up a schedule that monitors availability between Monday to Friday but only between 8am to 5pm and leaves out lunch hours between 12pm to 1pm. Attach this schedule to the Windows Application created on Exercise 3



Service Levels Exercise 4

1. Add the following in the Schedule Configuration:

SCHEDULE ADDSCHED (WINSCHEDULE, WEEKLY, MON-FRI, 08:00-17:00)

SCHEDULE EXCEPTION (WINSCHEDULE, WEEKLY, MON-FRI, 12:00-13:00)



Service Levels Exercise 4

2. Add the following in the AVAILABILITY Configuration:

APPLICATION SCHEDULE ("Windows", WINSCHEDULE)

The 'Windows' APPLICATION will have it's Availability Measured from Monday to Fridays from 8am to 12pm and from 1pm to 5pm.



Service Levels Targets

- Targets are based upon availability percentage
- Targets can be specified for any entities through the AVAILABILITY Configuration.
 - Target met: Entity that is up more than specified percentage
 - Target **NOT** met: Entity that is up less than or equal to the specified percentage.



Service Levels Targets Exercise 5

Task: Setup a Service Level Target for the Application “Windows” to 66.6%

1. Enter the following in the AVAILABILITY CONFIGURATION:

APPLICATION TARGET (“Windows”, 66.6)

2. Click Start
3. You should now see 66.6 appear under the Target column:

Applications - All						
Status	Name	View	Service	Target	Duration	Last Fail
UP (66.66 %)	Windows	Comp	Normal	66.600000		10/12/2017 10:53:02



Service Levels Targets Exercise 5

Task: Setup a Service Level Target for the Application “Windows” to 66.6%

4. You can now create a Threshold to fire an alert if the Availability percent is less than the Target field



Dynamic Entities Vs Static Entities

Static Entities are those Availability Entities that are defined in the AVAILABILITY Configuration e.g. PORT, PROCESS, SERVICES as built in Exercises 1-3

Dynamic Entities are those Availability Entities that are **NOT** pre-defined in the AVAILABILITY Configuration. They are of the THRESHOLD Type.



Dynamic Entities

How are Dynamic Entities different?

In Availability Configuration, there was simply UP or DOWN. In Thresholds where Dynamic Entities are defined, we can create many conditions that define what an UP status is and what a DOWN status is.



Creating Dynamic Entities

Creating a Threshold with a message destination called Availability

Availability Configuration can only address components that are UP or Down. But what if you would like to define what is up or down according to a set of rules?

For example if CPU is more than 60 Busy then we can define the Availability as Up



Creating Dynamic Entities

Task: Create a threshold which measures availability of an offboard node. Measure the availability of Cisco Service called **Cisco Database Layer Monitor** using the Prognosis record: **CallManagerApplianceService**. Create two conditions one for UP status and one for DOWN status. Connect them with each other.



Dynamic Entities Exercise 6

1. Open the threshold named : ***D:\IR Summit 2017 - Lab Content\Lab Availability – Advanced\Exercise6*** on Prognosis.
2. Create a Threshold Condition by pressing the + button
3. Select Prognosis record: CallManagerApplianceService:
4. Add the following Condition”

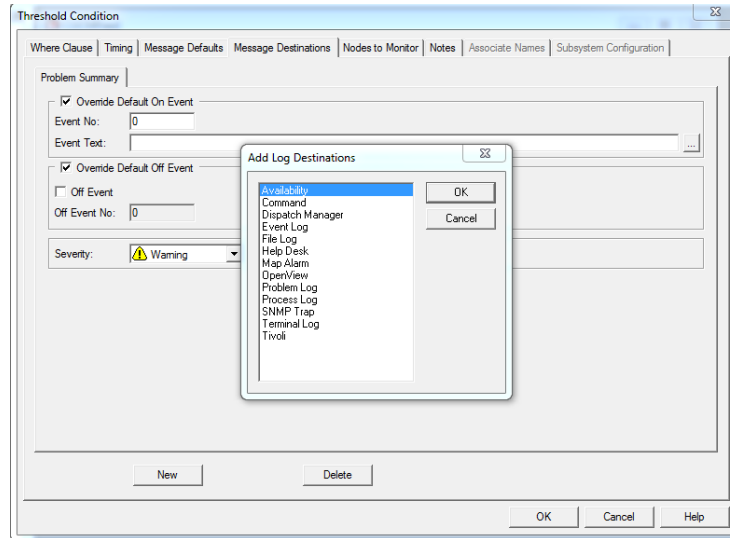
(STATUS = "DOWN" or STATUS = "Stopping" or STATUS = "Starting") AND SRVNAME = "Cisco Database Layer Monitor"

Let's discuss these conditions...



Dynamic Entities Exercise 6

2. On the Message Destinations tab, add the destination Availability :





Dynamic Entities Exercise 6

3. Enter the following:

- **Monitoring Entity:** THRESHOLD
- Configure a new entity
- **Event Type:** Down
- **Entity Name:** ^SRCNODE@ : @CMASRVCE.CMNAME@ : @CMASRVCE.SRVNAME@
- **Primary Sub ID:** ApplicationAvailability
- **Event Text:** Entity set to down by a threshold condition
- **Node:** #CurrentNode
- Override Default Availability Node checked



Dynamic Entities Exercise 6

This is what it should look like:

Threshold Condition

Where Clause | Timing | Message Defaults | Message Destinations | Nodes to Monitor | Notes | Associate Names | Subsystem Configuration

Problem Summary | Availability

Monitored Entity: THRESHOLD

Entity Name: MASRVCE.CMNAME@ : @CMASRVCE.SRVNAME@

Primary Sub ID: ApplicationAvailability

Secondary Sub ID:

Configure new entity

Condition Pair:

Event Type: Down

Destination Information

Event Text: Entity set to down by a threshold condition

Node: #CurrentNode

Override Default Availability Node

Options

Priority of this threshold when more than one threshold is monitoring the entity 1

Remove the entites configured by this threshold from the availability record

15 Minutes after the threshold has been stopped.

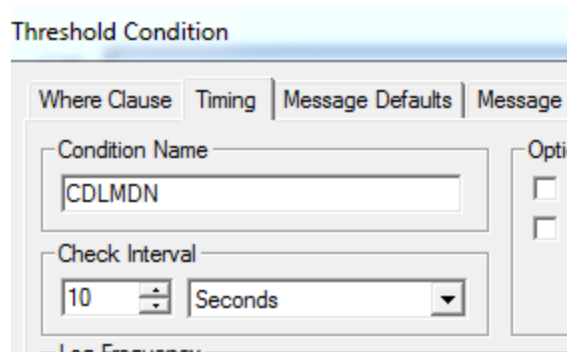
New Delete

OK Cancel Help



Dynamic Entities Exercise 6

4. Before exiting out of the threshold condition make sure there is a meaningful name on the Condition name under the Timing tab: CDLMDN





Dynamic Entities Exercise 6

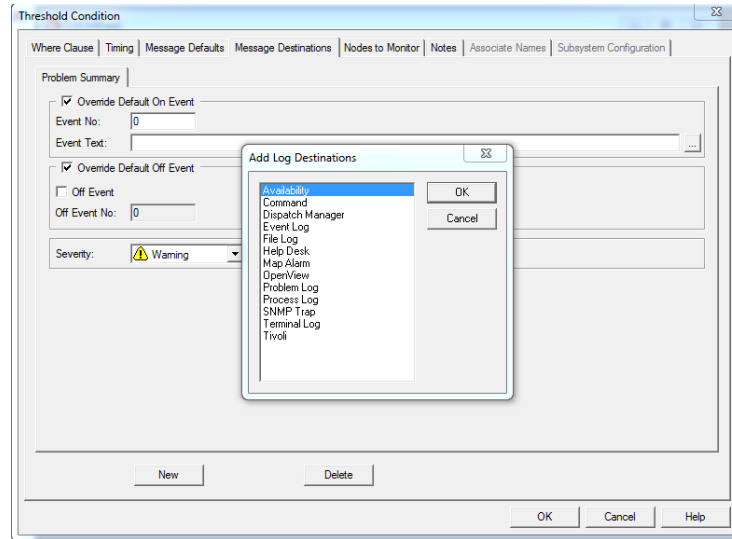
5. Create another Condition but this time we will create a Up event type. First thing is to create a Threshold Condition, on the Where Clause, put the following conditions for Down service for Cisco Database Layer Monitor:

(STATUS = "UP" or STATUS = "Not Activated" or STATUS = "Stopped by Admin") AND SRVNAME = "Cisco Database Layer Monitor"



Dynamic Entities Exercise 6

6. On the Message Destinations tab, add the destination Availability :





Dynamic Entities Exercise 6

7. Enter the following:

- **Monitoring Entity:** THRESHOLD
- Configure a new entity
- **Event Type:** Up
- **Entity Name:** ^SRCNODE@ :
@CMASRVCE.CMNAME@ : @CMASRVCE.SRVNAME@
- **Primary Sub ID:** ApplicationAvailability
- **Event Text:** Entity set to Up by a threshold condition
- **Node:** #CurrentNode
- **Condition Pair:** CDLMDN
- Override Default Availability Node checked



Dynamic Entities Exercise 6

This is what it should look like:

The screenshot shows a 'Threshold Condition' configuration window with the following fields and options:

- Problem Summary** / **Availability** tabs
- Monitored Entity:** THRESHOLD
- Entity Name:** ^SRCNODE@ : @CMASRVCE.CMNAME@ : @CMAS ...
- Primary Sub ID:** ApplicationAvailability ...
- Secondary Sub ID:** ...
- Configure new entity** dropdown
- Condition Pair:** CDLMDN
- Event Type:** Up
- Destination Information**
 - Event Text:** Entity set to up by a threshold condition ...
 - Node:** #CurrentNode ...
 - Override Default Availability Node**
- Options**
 - Priority of this threshold when more than one threshold is monitoring the entity:** 1
 - Remove the entites configured by this threshold from the availability record:** 15 Minutes after the threshold has been stopped.

Buttons at the bottom: New, Delete, OK, Cancel, Help



Dynamic Entities Exercise 6

8. Before exiting out of the threshold condition make sure there is a meaningful name on the Condition name under the Timing tab: CDLMUP

The screenshot shows a dialog box titled "Threshold Condition" with four tabs: "Where Clause", "Timing", "Message Defaults", and "Message". The "Timing" tab is selected. It contains two main sections: "Condition Name" with a text input field containing "CDLMUP", and "Check Interval" with a numeric input field set to "10" and a dropdown menu set to "Seconds".



Dynamic Entities Exercise 6

9. Go Back to the CDLMDN condition again and enter in the Condition Pair CDLMUP

A screenshot of a software configuration window. At the top, there is a dropdown menu labeled 'Configure new entity'. Below it, there are two input fields: 'Condition Pair' with a dropdown menu showing 'CDLMUP' selected, and 'Event Type' with a dropdown menu showing 'Down' selected. To the left of these fields are three vertical ellipsis buttons. Below the main configuration area, there is a horizontal line and another ellipsis button.

So Condition CDLMUP should have a condition pair CDLMDN and CDLMDN condition should have condition Pair CDLMUP



Dynamic Entities Exercise 6

10. Start the Threshold
11. Go to the Availability Central Display
12. You should see all Clusters (Dynamic with a Cisco service: *Cisco Database Layer Monitor*):

Up	JRP-CUC : JRP-CUC : Cisco Database Layer Monitor	THRESHOLD
----	--	-----------

13. Click on this and you should see



Dynamic Entities Exercise 6

14. Click on this entry and you should see the following:

The screenshot shows a web application window titled "Availability Details for Entity". The main content is divided into several sections:

- Summary:**
 - Name : JRP-CUC : JRP-CUC : Cisco Database Layer Monitor
 - Type : THRESHOLD
 - Sub Type :
 - Sub ID 1 : ApplicationAvailability
 - Sub ID 2 :
 - Monitored From : IPSE-JITESH
 - Instances : 1
 - Status : UP
 - Status Details : UP
 - Response Time :
- Availability:**
 - Availability Now : 100.00 %
 - Target :
 - Availability This Hour (State Changes) : 100.000000 % (0)
 - Availability Last Hour (State Changes) : 100.000000 % (0)
 - Availability Today (State Changes) : 100.000000 % (0)
 - Availability Yesterday (State Changes) : 100.000000 % (0)
 - Failures for Interval : 0
 - Failures Total : 0
 - Last Failure :
 - Mean Time Between Failures : 0
 - Total Time Between Failures :
 - Last State Change : 9/13/2017 12:49:13
- Service Level Target:**
 - Schedule Name :
 - Schedule Target :
 - Outage Required : DET
 - Service Type : Normal
 - Next Outage Start :
 - Next Outage End :
- Threshold Details:**
 - Threshold Name : CUCMFeed
 - Condition Name : CDLMDN
 - Priority :
 - Running On : IPSE-JITESH
- Recent Outages:** A table with columns: Down, Up, Duration, Service, Reason.



Test Your Knowledge

1. What basic components can be monitored with Availability Configuration?

- a) TCPIP
- b) PORT
- c) SERVICE
- d) All of the Above



Test Your Knowledge

2. True or False? Multiple instances of the same application be monitored by Prognosis Availability

- a) True
- b) False



Test Your Knowledge

- 3. You are creating putting a weighting on 3 logical entities, all three are equally important, if one goes down you want to see the overall application degraded, what weighing do you put against each entity?**
- a) CR against each Entity
 - b) DE against each Entity
 - c) 30 against each Entity
 - d) Nothing against any Entity



Test Your Knowledge

4. What is the main difference between static and dynamic entities?

a) Dynamic Entities are defined in the Availability Configuration. Static entities are defined in Thresholds

b) Static Entities are defined in the Availability Configuration. Dynamic entities are defined in Thresholds

c) Static entities and Dynamic entities can also be defined in the Thresholds

d) No Difference



What we covered...

- You can now measure Availability on components
- You can now build SLA against any component through Availability Configuration
- You can now add scheduling to measure Availability on certain periods.
- You can create multiple dynamic entities using Thresholds to measure SLA
- Useful Displays – Availability Central Display



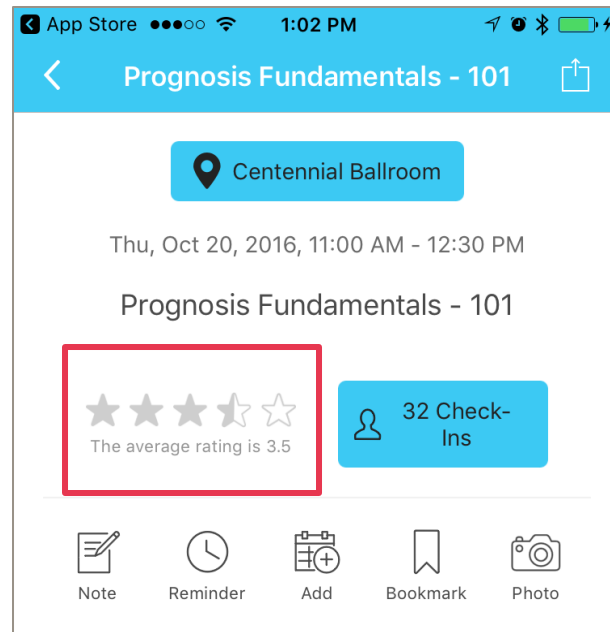
Whats Next?

- Availability across Distributed nodes vs Local node
- Nested Applications
- If you are interested to discuss further, come join us at the Hackathon tonight.



Next Steps

- **Please Rate the Class**
- **Take the Knowledge Reinforcement Test**
- **Log On to Online.Prognosis.com** to download slides & ask questions
- *Every class rating gets you a chance to win prizes!*



Questions?

