BSR:

Case 1 : Different routers configured as RP/BSR

R3:-Rp
R2-BSR

First configure BSR
BSR generates bootstrap messages every 60 sec on 224.0.0.13 to all pim all routers
When RP (R3) receives the message.
It communicates with BSR (unicast) to inform it is RP

Once BSR discovers RP in its next message it will add Rp info

BSR:-R2 2.2.2.2
RP:-R3 3.3.3.3

R3: RP 3.3.3.3
ip pim rp-cand

Case 2: Same router is RP/BSR

R2: BSR/Rp

BSR generates bootstrap messages every 60 sec on 224.0.0.13 to all pim all routers
that it is BSR as Well as Rp

Case 3: Single RP and Multiple BSR's
R3: RP 3.3.3.3
R2: BSR-1 2.2.2.2
R5: BSR-2 5.5.5.5

BSR exchange bootstrap messages comes to know abt each other.
There will be election for primary BSR
Criteria for BSR election
1.BSR with highest priority wins (Default 100)
2.Highest ip address (Tie breaker)

Once elected primary will inform every one abt RP.

4.Different RP's for different groups

R3: Rp 3.3.3.3 for 239.3.3.3
R1: Rp 1.1.1.1 for 239.1.1.1
R2: BSR 2.2.2.2

BSR comes up first inform all pim routers every 60 sec on 224.0.0.13
Rp's comes to know abt BSR
They make unicast communication with BSR
BSR in its next message add's both the RP's.

5.Two or more Rp's Advertising for same Group

Rp1: 3.3.3.3 239.1.1.1
Rp2: 1.1.1.1 239.1.1.1
BSR: 2.2.2.2

BSR advertise both RP's leaving the pim routers to decide the primary RP.

Pim Routers elects one of the RP and criteria is
1.Longest prefix match
e.g
R3: 239.1.1.0/24 -Elected as RP
R1: 239.1.0.0/16

2.Lowest priority

3.Highest hash

4.Highest ip address

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AutoRP:

1.Different routers are configured as RP/Mapping Agent (MA)

R3: RP 3.3.3.3
R2: MA 2.2.2.2

lets assume RP is configured first it announces its existence as Rp
on 224.0.1.39 (Routable Mcast address)
224.0.1.39 (Mapping Agents can listen)
Mapping Agents inform all pim routers on 224.0.1.40 (Mcast Address of all routers)

2.Same Router configured as Rp/MA.
 MA adv all pim routers on 224.0.1.40

3.Single RP /Multiple Mapping Agents

Mapping Agent with highest priority wins (Def pri 100)
tie breaker is highest Ip Address.

4.Multiple Rp's Adv for different groups
RP1-R1 1.1.1.1 239.1.1.1
Rp2 -R3 3.3.3.3 239.3.3.3
MA-R2-Sends info abt both rp's to all pim routers on 224.0.1.40

5.Multiple routers adv for same Group

Rp1- R1: 1.1.1.1 239.1.1.1
Rp2-R3:3.3.3.3 239.1.1.1
MA-R2: 2.2.2.2 (Elects the primary RP)

criteria is
Highest pri wins

Highest Ip address (Tie breaker)

BSR: Open standard

R3:RP
R2: BSR router

RP-candiate R3
ip pim rp-candidate lo 0

BSR-R2
ip pim bsr-candidate lo 0

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AutoRP: Cisco

R3:
RP:R3:3.3.3.3
ip pim send-rp announce lo0 scope 10

R2:
MA:R2: 2.2.2.2
ip pim send-rp-discovery loopback0 scope 10

On All routers including RP's and MA
ip pim autorp listener

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AutoRP
Case1: R2 is Rp for even groups
 R1 is Rp for odd groups

R3:Rp
ip pim autorp listener
ip pim send-rp-announce Loopback0 scope 10 group-list 1
access-list 1 permit 239.4.4.4
access-list 1 permit 239.2.2.2
R1:
ip pim autorp listener
ip pim send-rp-announce Loopback0 scope 10 group-list 1
access-list 1 permit 239.3.3.3
access-list 1 permit 239.1.1.1
Case2: All groups are created on both Rp's

R3:Rp
ip pim autorp listener
ip pim send-rp-announce Loopback0 scope 10 group-list 1
access-list 1 permit 239.4.4.4
access-list 1 permit 239.3.3.3
access-list 1 permit 239.2.2.2
access-list 1 permit 239.1.1.1

R1:
ip pim autorp listener
ip pim send-rp-announce Loopback0 scope 10 group-list 1
access-list 1 permit 239.4.4.4
access-list 1 permit 239.3.3.3
access-list 1 permit 239.2.2.2
access-list 1 permit 239.1.1.1
Mapping Agent will choose the RP with highest ip address and inform all pim routers
R2: Rp
R1: Bkup
Case3: Mapping Agent will pick the Rp for specifc groups

R2:Mapping Agent.
ip pim autorp listener
ip pim send-rp-discovery Loopback0 scope 10
ip pim rp-announce-flter rp-list 3 group-list 1
ip pim rp-announce-flter rp-list 4 group-list 2
!
!
!
access-list 1 permit 239.3.3.3
access-list 1 permit 239.1.1.1
access-list 2 permit 239.4.4.4
access-list 2 permit 239.2.2.2
access-list 3 permit 1.1.1.1
access-list 4 permit 2.2.2.