Simple Mail Transfer Protocol (SMTP) is the most widely used e-mail sending protocol. This sequence diagram describes the steps involved in sending an e-mail. The DNS queries involved in this process have also been covered.

In this example luke@sender.com is trying to send an e-mail to aibo, c3po and r2d2 at receiver.com.

1. **DNS Query**
   - MX Resource Record Question = receiver.com

2. **DNS Reply**
   - MX Record Record Answer = mail.receiver.com,
   - A Resource Record = 66.218.71.63

3. **SYN**
   - TCP Port = 25
   - mail.sender.com initiates a three way TCP connection handshake by sending a SYN to the IP address of mail.receiver.com. The request is sent to TCP port 25.

4. **SYN ACK**

5. **ACK**

6. **Pointer Query**
   - 131.107.3.125

7. **Pointer Reply**
   - mail.sender.com

8. **220 mail.receiver.com SMTP Ready\n**

9. **HELO mail.sender.com\n**

10. **ACK**

11. **ACK**

12. **MAIL FROM:luke@sender.com\n**

13. **250 OK \n**

14. **VRFY aibo\n**

15. **ACK**

16. **550 Unknown user: aibo \n**

17. **ACK**

18. **VRFY c3po\n**

19. **ACK**

20. **250 OK \n**

21. **VRFY r2d2\n**

22. **ACK**

23. **250 OK \n**

24. **MAIL FROM:luke@sender.com\n**

25. **250 OK \n**

26. **ACK**

27. **The mail.sender.com mail server first requests an MX record for receiver.com.**

28. **The DNS server finds the highest preference mail server for receiver.com and reports the name of the mail server in an MX resource record. The A resource record for the IP address is also included in the message.**

29. **mail.sender.com initiates a three way TCP connection handshake by sending a SYN to the IP address of mail.receiver.com. The request is sent to TCP port 25.**

30. **The three way handshake has been completed. TCP connection has been established with mail.receiver.com**

31. **The SMTP receiver replies with a string starting with 220. This indicates that the receiver is ready to transact with the e-mail sender.**

32. **The sending mail server identifies itself by the HELO command. The HELO command contains the server name.**

33. **The receiver cross checks the sender’s name by performing a pointer query using the IP address of the sender**

34. **The pointer reply provides the name of the mail server.**

35. **The name in the HELO command and pointer query reply match. The mail.receiver.com server accepts the HELO by replying with 250**

36. **The sender requests verification of the first user aibo**

37. **The user is not found. The receiver replies with 550. E-mail send to this user will not be attempted.**

38. **The c3po verification request is sent**

39. **c3po is verified as present**

40. **r2d2 is also verified in the same fashion.**

41. **SMTP sends the MAIL FROM command of the message envelope**

42. **The receiver acknowledges the receipt of the MAIL FROM command**
The sender sends the RCPT TO command for c3po.

Receiver acknowledges.

The sender sends the RCPT TO command for r2d2.

Receiver acknowledges.

The sender signals the start of data by using the DATA command.

The receiver prompts for the start of the e-mail.

Send the e-mail message headers and the body of the e-mail typed by the user.

Signal the end of the e-mail by a line containing just a DOT (.).

The SMTP receiver indicates that the e-mail has been accepted.

Signal the end of the session.

SMTP Receiver releases the TCP connection.

SMTP Sender releases the TCP connection.