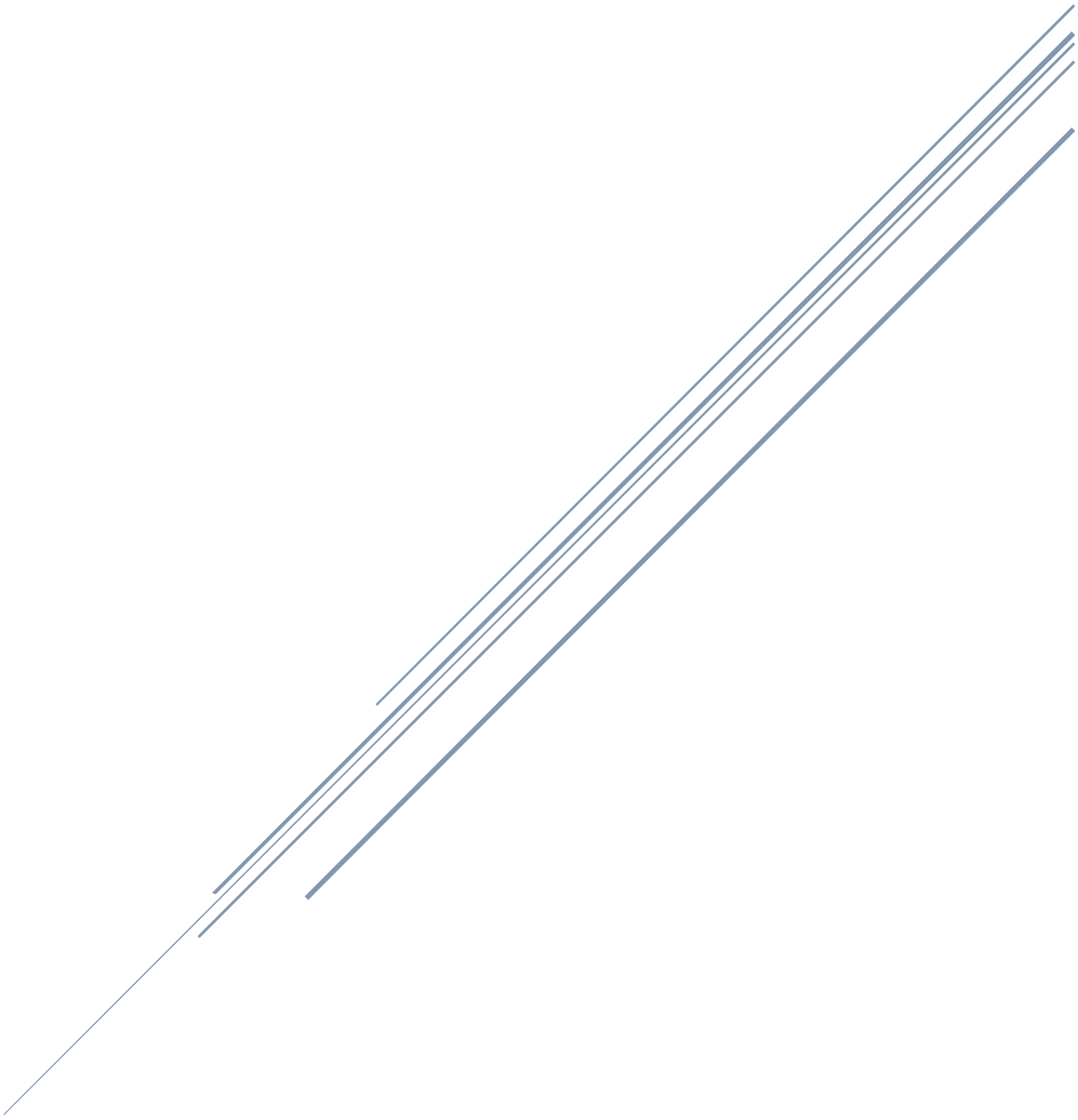
MILKATURKA SCENARIO

Orhan Ergun



MilkaTurka Business Background:

MilkaTurka is a well-known company that produces daily fresh milk, five different types of cheese and other dairy products.

The company was founded in 1986 and since then the business has grown very rapidly.

All their business operations are located in Turkey. They have 480 front stores where they sell their products, and they operate in 45 different cities in Turkey.

In each city, they have at least one production facility, which supplies all their products to other stores within the same city.

In Istanbul, Ankara, and Izmir, they have at least 20 stores. And in all these 3 cities, they have two production facilities.

The headquarter of the company is located in Istanbul. In their headquarter, they have a mid-range datacenter, which hosts servers, stores, production facility connections, and network security devices as well as firewalls, IPS/IDS, load balancers, and proxies.

They have few applications and the important ones for their businesses are Voice over IP and ERP application, both of which can manage their stocks, pricing information and the sales data and an email.

They have two datacenters: one in Istanbul and the other in Izmir. They are using Izmir data center as a Disaster Recovery facility since none of their applications require less than 10-minute-convergence time. They considered building an active-active datacenter last year, but the CAPEX and OPEX of building active-active datacenter were too expensive for the firm

In their headquarter in Istanbul, there are 21 VLANs: Ten of them are for the data, another ten for the voice, and one VLAN is allocated to the wireless network.

In the stores, there are only three VLANs: One for the general data usage, one for the IP phone, and one for the computer that has access to ERP application. The store manager can control only this computer.

Currently, they don't have any quality of service in their network. In their last board meeting, MilkaTurka decided to sell some of their products at 1400 SASA locations. They understand the ramifications of this decision, as it will cause a lot of business and technical challenges for the firm.

SASA Business Background:

SASA is the biggest hypermarket chain in Turkey. They have 3200 stores in Turkey and 1400 of them are very close to the locations of MilkaTurka.

And that is among the reasons why MilkaTurka will sell only their products at those 1400 stores.

Like MilkaTurka, SASA has many suppliers and can provide a shelve in the market to their suppliers.

SASA has two types of markets: SASA and SASA mini. In the SASA stores, there are about 60 personnel, including store managers, deputy managers and cashiers.

In SASA mini, they usually have six or seven personnel because the size of the SASA mini stores is very small.

In each SASA store, there is local PC that keeps the sales and stock information.

All SASA stores are connected to SASA datacenter and the stock inventory is uploaded every week to the central servers.

If the product price needs to be updated, changes are reflected immediately and simultaneously from both the server and the stores.

The challenges associated with the weekly update for MilkaTurka and other many suppliers are that their products might be out of stock and they might not be informed until they receive the weekly update.

Thus, MilkaTurka want the stock information in real time. The only application in each store that can provide real-time sales and 5 stock is IPv6, and this will be another challenge for MilkaTurka since their network currently doesn't support IPv6.

Network Diagrams

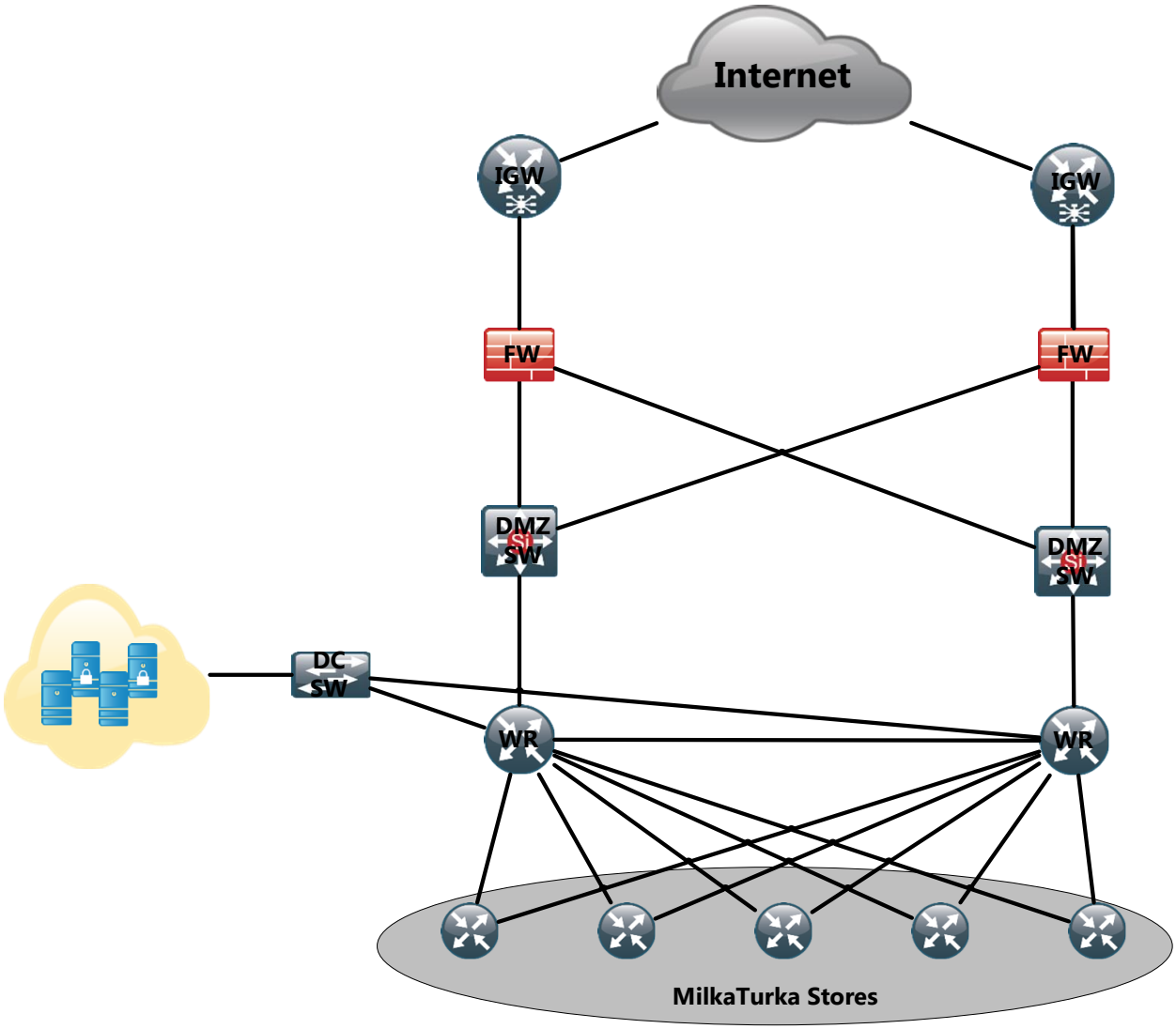


Figure: MilkaTurka Stores

Q) What are the primary concerns of MilkaTurka based on the given information? (Choose all that apply)

a) Installing and operating new circuits/connections in order to provide connectivity between MilkaTurka DC and each
b) SASA store
c) Finding equipment that can support the connectivity requirements

d) Purchasing the physical hardware and router/firewall in order to provide connectivity to each SASA store
e) Securing the connections required in providing connectivity to each store.

Q) Why do you think the process of installing and managing the new circuits is difficult?

a) Large scale connectivity requirement allows operational
b) Complexity
c) Configuring thousands of devices will be difficult to achieve
d) While configuring thousands of devices, many configurational mistakes can be made
e) The number of head-end devices to support additional connections at the MilkaTurka DC

Q) From the MilkaTurka point of view, the first security problem is based on which given information?

a) The new MilkaTurka equipment, which will be installed in every SASA store to support new connections, is physically beyond the control of MilkaTurka
b) The number of security polices will be too many given the number of devices that MilkaTurka will install at the SASA stores.
c) Firewalls at SASA stores may not support IPSEC encryption
d) Routers at SASA stores may not support IPSEC encryption
e) All of the above

Q) Based on the provided information, which options are required in starting the design? (Choose two)

a) The number of SASA locations that MilkaTurka will sell their products
b) The amount of traffic, including the sales and stock data, that the
c) SASA ERP application will send to MilkaTurka
d) The typical network configuration of the SASA stores
e) The security level requirements of the MilkaTurka stock and sales data
f) All of the above

E-Mail 1 is Available:

Hi MILKATURKA,
Please be informed that we can assist you to install your additional device and link if you need them, but we require extra power in 1400 locations. Kindly explain this challenge to the upper management. We believe that our devices can provide tunnels, so let's fix this problem so that we find the best solution for you.

Q) Do you recommend MilkaTurka to install a new equipment and circuit in each SASA store?

a) Yes
b) No

Q) What would be the alternate design if you don't install new equipment and new circuit?

a) Configure a tunnel on the existing SASA devices
b) Rely on the weekly report provided by SASA
c) Purchase only new circuit for each SASA store and connect it to the existing SASA equipment

Q) MilkaTurka decided to create a tunnel rather than relying on the weekly update or purchasing new circuit that can connect to SASA equipment.
To decide which tunneling solution is useful, what parameter(s) do you need?

a) What are the security requirements for the sales and stock data?
b) Network convergence time requirement for the application
c) Which type of transport application requires Layer 2 or Layer 3?
d) All of the above

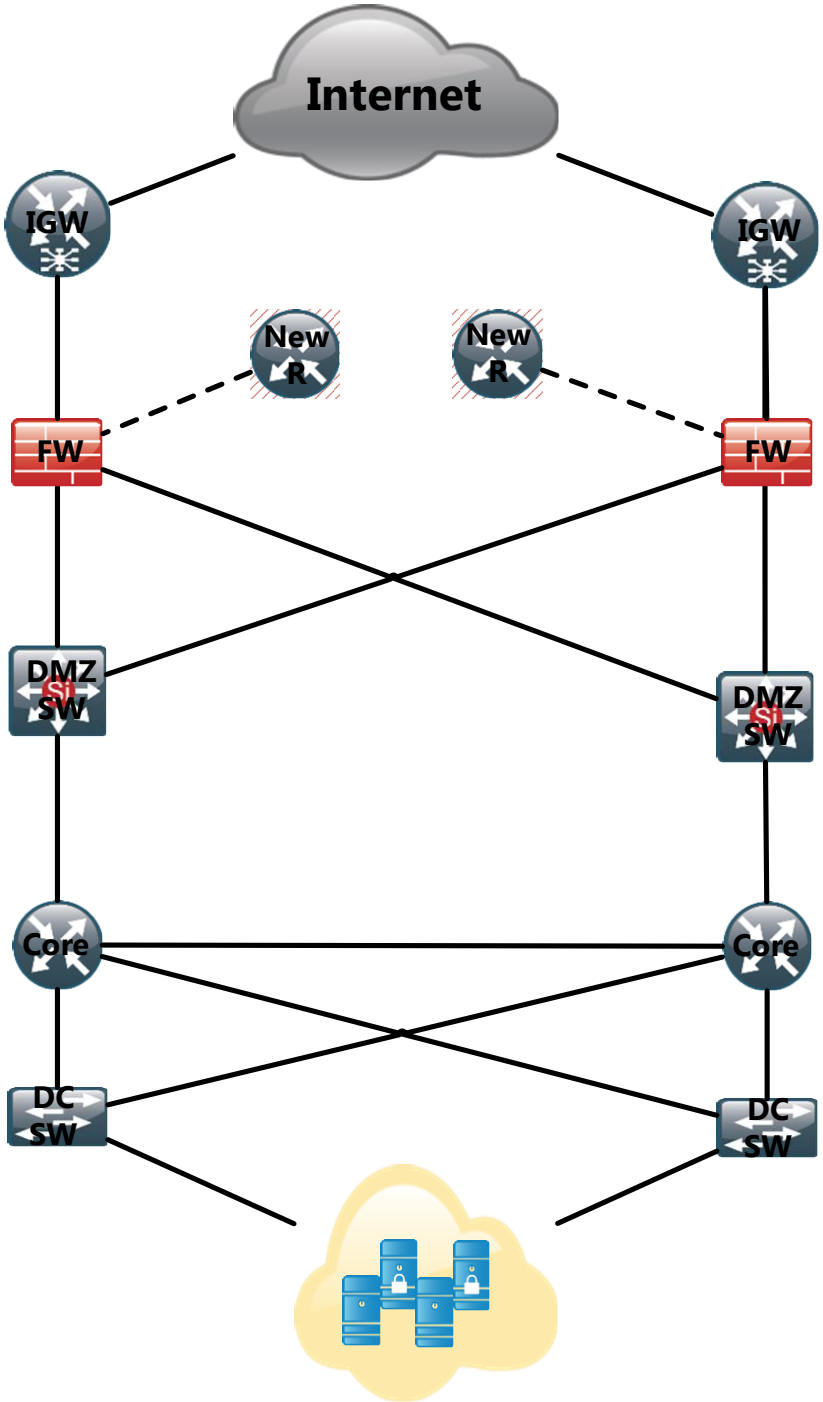
Q) For each of the tunneling technologies in the below chart, kindly mark the areas that would be of concern for MilkaTurka.

	Configuration and Management Complexity	Suitable over Public WAN
MPLS L2VPN	☐	☐
MPLS L3VPN	☐	☐
GRE Tunnels	☐	☐
IPSEC Tunnels	☐	☐

Q) Which tunneling technology would you recommend for the connection between MilkaTurka and SASA stores?

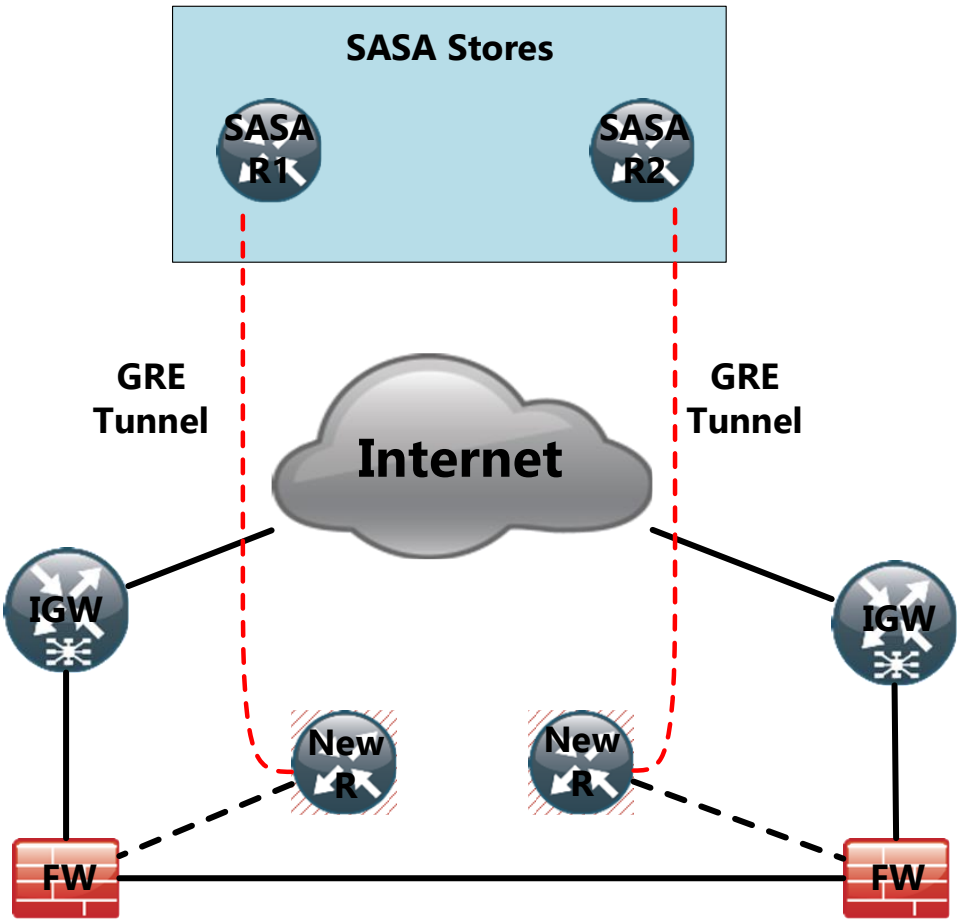
a) MPLS L2VPN
b) MPLS L3VPN
c) GRE
d) IPSEC
e) VPLS

Q) Based on the below diagram of MilkaTurka, where would you deploy the GRE tunnels?



a) Existing core router should be used to bring the GRE tunnels.
b) The GRE tunnels should be terminated on the DC Switches so that traffic is hand off to the closest point of the servers
c) New router should be purchased and connected to the firewalls, and GRE tunnels should be terminated on this new router
d) The existing Internet Gateway routers should be used for the GRE tunnels
e) Any of this location is actually the same for the MilkaTurka network design

Q) MilkaTurka network architect proposed the below tunnel configuration. Do you think that the proposed tunnel design is the best for MilkaTurka?



a) Yes
b) No

Q) Why do you disagree with the proposed tunnel design?

a) There should be only one GRE tunnel per SASA store
b) GRE tunnels shouldn't pass through the firewalls
c) GRE tunnels should be terminated on the Internet Gateways
d) There should be four GRE tunnels per SASA store
e) GRE tunnels should terminate on the firewalls

Q) Which type of network WAN topology are the new tunnels between MilkaTurka and SASA stores?

a) Partial Mesh
b) Full Mesh
c) Ring
d) Hub and Spoke
e) Square

Q) Which routing protocol should MilkaTurka run over the new Hub and Spoke tunnel network to support scalability and the other given requirements?

a) OSPFv2
b) EIGRP
c) OSPFv3
d) ISIS

Q) Which one of these options would be the most important design problem for the tunneled WAN network?

a) The quality of service configuration required to support Routing Protocol
b) The number of route in the routing table
c) The number of routing protocol adjacency
d) The packet replication that can cause packet drop at the Hub site
e) The security configuration between the routing neighbors creates configuration complexity

Q) How many routers should MilkaTurka install at the DC in order to terminate all the tunnels from SASA stores?

a) One

b) Two
c) Three
d) Four
e) It depends

Q) Which routing protocol feature should be enabled at the store site?

a) OSPF Stub Area
b) BFD
c) EIGRP Stub
d) EIGRP Feasible Successor
e) OSPF NSSA Area

Q) Do you think that running EIGRP over the GRE tunnels on this network can improve the resiliency?

a) Yes
b) No

Q) Could you use BGP instead of EIGRP on this network?

a) Yes
b) No

Q) What would be the two reasons why you would choose BGP over EIGRP?

a) BGP will be easier to configure on the Hub router
b) BGP can converge faster
c) BGP provides better filtering and policy capability
d) With BGP tunnel, bandwidth requirement can be reduced
e) BGP scales to a much higher neighbor count

Q) MilkaTurka want to implement VTP in their headquarter, would you recommend it?

a) Yes
b) No

Q) MilkaTurka want to identify the applications that are consuming the most bandwidth. They also want to know which IP address creates the most amount of traffic for their front stores. Which options highlighted below would provide this information? (Choose all that apply)

a) SNMP
b) Syslog
c) Netflow
d) IPFIX

Q) Which technology mentioned below provides standard base flow information?

a) IPFIX
b) Netflow
c) Radius
d) TACACS
e) Sflow

Q) MilkaTurka realized that after enabling the IPFIX, they don't use one of their uplinks for the Internet Gateway Router. They want both links to be active. Which below information would you recommend for them as a solution? (Choose all that apply)

a) IGP configuration
b) Internet Gateway configuration
c) Ingress and Egress bandwidth utilization
d) BGP Configuration

E-Mail 2 is Available:

We have enclosed our Internet Gateway Router configuration to this email. As you can see, we are using BGP on the router, and we have only one Internet service provider. As well as having two circuits, we have different BGP sessions over each circuit. In addition, we can advertise our service-provider assigned IP address block, and there is no specific current BGP policy other than prefix advertisement.
Kindly use the second link as well since we don't want it to be idle.

Q) Which BGP parameters mentioned below can help MilkaTurka to utilize their second link?

BGP Attribute/Direction	Ingress	Egress
MED	☐	☐
AS-Path Prepend	☐	☐
Community	☐	☐
Weight	☐	☐
Origin	☐	☐

Q) A customer asked its service provider which second circuit is to be terminated on the different BGP router. Which options highlighted below can provide download traffic – for MilkaTurka – that can be carried over both links? (Choose all that apply)

a) BGP MED
b) AS-Path Prepend
c) BGP Communities
d) Weight
e) Local Preference

Q) Is this sufficient to satisfy MilkaTurka link usage requirement?

a) Yes
b) No

Q) MilkaTurka want to harden the BGP router. Which features highlighted below would provide DDOS protection on their BGP router?

a) SSH
b) uRPF Strict Mode
c) CoPP
d) uRPF Loose Mode
e) NTP

Q) One of the MilkaTurka network engineers wanted to use BGP MD5 Authentication to protect the Internet Gateway from DDOS attacks since, according to him, when it is used with GTSM, it provides an additional layer of DDOS protection. Would you agree with this engineer?

a) Yes
b) No