For the DATS synthesis it is necessary to complete 4 stages, which were described before. Any DATS consists of network segments. In this case, DATS, which must be designed, can consist of a few network segments, moreover, SI, a hub and a server can be a component of any network segment. So, on the first stage of DATS design it is necessary to define the number of network segments in DATS. Then, in accordance with this, the number of hubs, servers and their coordinates is defined. Thereby the initial configuration of DATS is determined.

Having received the initial coordinates, it is necessary to move a hub and a server at the optimal positions. The process of optimal hub move can be named as the deformation of a network segment. Hereby the minimization of distances sum is carried out between a data hub and SI. One of six equipment types (table 2) with the definite data transmission rate and cost can be placed in any network element, besides the communication channel lease cost depends on the distance (table 3). Therefore the DATS synthesis foresees the necessity to select the equipment from a given set of types, placing them in a certain SI and attaching a hub to them in the way of minimizing the communication channels lease and equipment cost.

On the final stage, before the calculation of DATS cost, it is necessary to perform the secondary deformation of the network segments, i.e. to clarify the hub and server coordinates taking into account the minimum equipment and channels lease cost. Thus, for the DATS synthesis of a computer network it is necessary to complete the following steps:

1. To determine the number of hubs.
2. To calculate the hub and server coordinates in terms of minimum distance.
3. To clarify the server and hub coordinates.
4. To clarify the equipment types.
5. To clarify the hub and server coordinates taking into account the minimum equipment and channels lease cost.
6. To calculate the DATS cost.

Modern methods of solving the following tasks involve the use of machine methods for calculations. As DATS synthesis is the task of nonlinear programming, in order to perform the calculations while DATS synthesis, it is necessary to develop the computer program to perform calculations for all DATS parameters.

Table 1

The end of table 1

Number of SI	Coordinates of SI, km		Information volume Kbytes
	X	Y	
17	80	40	200
18	100	40	360
19	0	60	460
20	20	60	240
21	40	60	500
22	60	60	800
23	80	60	1200
24	100	60	860
25	0	80	200
26	20	80	240
27	40	80	500
28	60	80	800
29	80	80	1200
30	100	80	860

Table 2

Type of equipment

N	Transfer rate, bps	Cost
1	50	7000
2	75	20000
3	100	50000
4	200	110000
5	600	210000
6	1200	350000

Table 3

Channels lease

Distance, km	Lease cost per 1 minute
100	50
600	150
1200	250
3000	300